AQUIND Limited

AQUIND INTERCONNECTOR

Statement of Common Ground Between AQUIND Limited and Highways England FINAL

The Planning Act 2008

Document Ref: 7.5.10
PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Statement of Common Ground Between AQUIND Limited and Highways England FINAL

PINS REF.: EN020022
DOCUMENT: 7.5.10

DATE: 25 FEBRUARY 2021

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	Statement of Common Ground with Highways England
Revision	005
Document Owner	WSP UK Limited
Prepared By	WSP UK Limited
Date	25 February 2021
Approved By	M. Wood
Date	25 February 2021

CONTENTS

TABLES

APPENDICES

1. INTRODUCTION AND PURPOSE

1.1.1.1. A Statement of Common Ground ('SoCG') is a written statement produced as part of the application process for an application for a Development Consent Order ('DCO') and is prepared jointly by the Applicant and another party. A SoCG sets out the matters of agreement between both parties, matters where there is not agreement and matters which are under discussion.

1.1.1.2. In this regard paragraph 58 of the Department for Communities and Local Government's guidance entitled "Planning Act 2008: examination of applications for development consent" (26 March 2015) hereafter referred to as DCLG Guidance describes a SoCG as follows:

> "*A statement of common ground is a written statement prepared jointly by the Applicant and another party or parties, setting out any matters on which they agree. As well as identifying matters which are not in real dispute, it is also useful if a statement identifies those areas where agreement has not been reached. The statement should include references to show where those matters are dealt with in the written representations or other documentary evidence*."

1.1.1.3. The aim of a SoCG is to assist the Examining Authority to manage the examination of an application for a DCO by providing an understanding of the status of matters at hand and allowing the Examining Authority to focus their questioning. The effective use of SoCG is expected to lead to a more efficient examination process.

1.1.1.4. A SoCG may be submitted prior to the start or during an Examination and updated as necessary or as requested during an Examination.

1.2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

1.2.1.1. AQUIND Limited ('the Applicant') submitted an application for the AQUIND Interconnector Order (the 'Order') pursuant to Section 37 of the Planning Act 2008 (as amended) (the 'PA2008') to the Secretary of State ('SoS') on 14 November 2019 (the 'Application').

1.2.1.2. The Application seeks development consent for those elements of AQUIND Interconnector (the 'Project') located in the UK and the UK Marine Area (the 'Proposed Development').

1.2.1.3. The Project is a new 2,000 MW subsea and underground High Voltage Direct Current ('HVDC') bi-directional electric power transmission link between the South Coast of England and Normandy in France. By linking the British and French electric power grids it will make energy markets more efficient, improve security of supply and enable greater flexibility as power grids evolve to adapt to different sources of renewable energy and changes in demand trends such as the development of electric vehicles. The Project will have the capacity to transmit up to 16,000,000 MWh of electricity per annum, which equates to approximately 5 % and 3 % of the total consumption of the UK and France respectively.

1.2.1.4. The Proposed Development includes:

- HVDC Marine Cables from the boundary of the UK Exclusive Economic Zone to the UK at Eastney in Portsmouth;
- Jointing of the HVDC Marine Cables and HVDC Onshore Cables;
- HVDC Onshore Cables;
- A Converter Station and associated electrical and telecommunications infrastructure;
- High Voltage Alternating Current ('HVAC') Onshore Cables and associated infrastructure connecting the Converter Station to the Great Britain electrical transmission network, the National Grid, at Lovedean Substation; and
- Smaller diameter Fibre Optic Cables ('FOC') to be installed together with the HVDC and HVAC Cables and associated infrastructure.

1.3. THIS STATEMENT OF COMMON GROUND AND THE ROLE OF HE

1.3.1.1. This SoCG has been prepared by the Applicant - in accordance with the DCLG Guidance and precedent examples of SoCG available on the Planning Inspectorate's ('PINS') website to reflect engagement to date as set out in Table 2.1. This signed SoCG therefore represents an accurate reflection of matters agreed between the Parties at Deadline 8.

1.3.1.2. Highways England was established under the Infrastructure Act 2015, and appointed and licensed as a strategic highways company by the Secretary of State for Transport on 1 April 2015.and is responsible for operating, maintaining and improving the Strategic Road Network (SRN) within England on behalf of the Secretary of State for Transport

1.3.1.3. Highways England would also be responsible for monitoring the DCO provisions and requirements that affect the SRN.

1.3.1.4. For the purpose of this SoCG the Applicant and Highways England will be jointly referred to as the 'Parties'.

2. RECORD OF ENGAGEMENT UNDERTAKEN TO DATE

2.1.1.1. The table below sets out a summary of the key meetings and correspondence between the Parties in relation to the Proposed Development.

The consultation material referred to at Chapter 22 of the Environmental Statement (Traffic and Transport) and specifically at Appendix 22.3 (Consultation Responses) (APP- 451). A copy of APP-451 is also provided in Appendix 1 of the Technical Note HE01 entitled 'Response to Highways England Note TN02' (Appendix xx).

Table 2.1 – Consultation with Highways England

Date	Form of Contact	Summary
22.05.2018	Highways England	Update on key area of interest for Highways England where proposed cable route passes under A27, linking Portsea Island to the mainland.
31.05.2019	Highways England	General project update and scope of Transport Assessment.
13.09.2019	Hampshire County Council (HCC) and Highways England	Update. Proposals for HDD under A27. Street works
23.01.2020	Highways England	Highways England updated their main concerns; geotechnical, transport /junction capacity and process. Technical Note 2 to be issued.
14.02.2020	HCC and Highways England	Project update, Technical Note 2 issues, discussion regarding route options, construction methodology, HGV movements and A3 tactical diversion routes.
08.07.20	Highways England	Multidisciplinary meeting. Agreed to establish a working group to progress outstanding technical matters. Highways England confirmed receipt of

Date	Form of Contact	Summary
		WSP's response to Technical Note 2 and that initial review confirmed all Highways England issues had been addressed, although at this stage, not all of them had been fully resolved.
24.08.20	Highways England	Highways England issued Technical Note 3 setting out the remaining traffic and transport technical issues to be resolved.
10.09.20	Highways England	Multidisciplinary working group, discussion on geotechnical issues, transport modelling and SoCG. Highways England agreed that they and AQUIND are confident that all outstanding matters are capable of resolution before the close of the examination, specifically those items set out within Technical Note 3, which WSP are in the process of responding to. Highways England confirmed that they and the other highway authorities would like to agree a tripartite agreement with the Applicant on highway and traffic matters.
08.10.20	Highways England	Multidisciplinary working group, discussion on geotechnical issues, transport modelling and protective provisions. The approach to consolidate the various inputs required to satisfy the geotechnical risk assessment into a single document was agreed, with both parties confident the level of geotechnical risk is low given the proposed depth of the installation. The Applicant is continuing to undertake assessment to underpin the report. Further work is taking place in relation to A3(M) Junction 2 and Junction 3 modelling to deal with Highways England queries set out in Technical Note 3. Updates are also being made to the FCTMP in relation to Abnormal Indivisible Loads and timing of

Date	Form of Contact	Summary
		HGV movements. Highways England will provide further queries in relation to collision data. Highways England are in the process of identifying a internal point of contact to deal with the property/land related discussions. Protective provisions are being drafted to deal with the project specific risks (i.e. noting the installation will be by horizontal directional drilling at depth below the highway) by the Applicant and will be sent to Highways England when ready.
29.10.20	Highways England	Multidisciplinary working group, discussion on geotechnical issues, transport modelling, protective provisions and SoCG. Work is progressing on the geotechnical risk assessment in relation to settlement calculations and underpinning the assumptions being used. Updates have been provided on A3(M) Junction 2 and Junction 3 capacity assessments and the assumptions used are being assessed in more detail reflecting the data available to ensure they are credible/robust. Highways England will provide comments on the Supplementary Transport Assessment. Highways England noted good progress has been made in relation to the level of detail provided in relation to AILs and HGV movements. Highways England have also appointed a property contact who will progress discussions with the Applicant's agent on land/property matters. Protective Provisions have been issued and will be progressed between the parties.
11.11.20	Highways England	Multidisciplinary working group, discussion on geotechnical issues, transport modelling, protective provisions and SoCG.

Date	Form of Contact	Summary
		The geotechnical risk assessment is being progressed and the target is to issue the final version to Highways England by Deadline 5. The revised Technical Note regarding A3(M) Junction 2 & 3, including the modelling, is ready for submission to Highways England. Highways England will issue a further query regarding collision data and Traffic Management in relation to HGV movements at the entrance to Farlington Playing Fields. Highways England welcome further discussions on Permit Schemes with the Portsmouth and Hampshire highway authorities to process regarding notifications and co-ordination (e.g. for emergency services) are adequately covered. The Applicant has issued a Draft Option Agreement and Deed of Easement to Highways England and will discuss these further with the Highways England property lead. Highways England will respond in more detail on the Protective Provisions, but initial reviews appear to show that Traffic Management is well covered but that additional drafting to reflect the property and monitoring aspects of the project may be necessary. Discussions took place in relation to the SoCG to be submitted for Deadline 4.
18.11.2020	Highways England	Meeting with Highways England to discuss ongoing actions and deliverables.
25.11.2020	Highways England	Meeting with Highways England to discuss ongoing actions and deliverables. It was agreed that an updated SoCG will be submitted at Deadline 6. However, due to the Christmas break an updated SoCG was not submitted at D6.

Date	Form of Contact	Summary
7.01.2021	Meeting	Meeting with Highways England to discuss ongoing actions and deliverables. Geotechnical report submitted to Highways England for review and sign off. Outstanding traffic and transport matters including use of laybys on the SRN discussed. <u>General discussion with regard to the progression of the protective provisions and inclusion of Highway England as a 'relevant highway authority' within the DCO wording.</u>
14.01.2021	Meeting	Meeting held with PCC, HCC and Highway England to discuss cross boundary strategic transport matters. It was agreed at this meeting that it was not considered to be necessary to prepare a separate Triparty SoCG on matters agreed between the Parties in relation to transport and highways matters. Therefore, these will be dealt within the individual SoCGs with PCC, HCC and Highway England.
21.01.2021	Meeting	Meeting with Highways England to discuss ongoing transport matters. Highways England raised the inclusion of Highway England as a 'relevant highway authority' within the DCO wording. The Applicant proposes the amendments outlined in Table 4.13. It is unlikely that the parties will be able to agree on this matter.
01.02.21	Meeting	A meeting with PCC, HCC and Highways England to discuss outstanding matters with regard to cross boundary transport matters. Further comments received from all parties on traffic management measures, FCTMP and the FTMS. The

Date	Form of Contact	Summary
		Applicant is reviewing comments and revising the relevant documents where required.
12.02.2021	Meeting	Meeting with Highways England to discuss the Junction Capacity Analysis, Collision Data information together with updates to the Framework Construction Traffic Management Plan (FCTMP) and Framework Traffic Management Strategy (FTMS). Progress of land right matters as discussed and timeframes for resolving before the close of the hearings. Positive meetings and it was agreed that relevant Technical Notes are to be appended to the final version of the SoCG.

3. SUMMARY OF TOPICS COVERED BY THE STATEMENT OF COMMON GROUND

3.1. TOPICS COVERED IN THE STATEMENT OF COMMON GROUND

3.1.1.1. The following topics discussed between the Applicant and Highways England are discussed in this SoCG:

- Planning policy
- Proposed Works – HDD Construction Traffic Routing
- Abnormal Loads
- Collision Data
- Site Access Arrangements for HDD- Langstone Harbour
- Management of Construction
- Traffic Flow Impacts
- Duration of Works
- Modelling
- Geo-technical
- Land Rights
- DCO

3.1.1.2. The Applicant will continue to work with Highways England to address those matters which are ongoing and both parties believe that these are capable of resolution ahead of the Examination concluding.

4. CURRENT POSITION

4.1. PLANNING POLICY

Table 4.1 – Planning Policy

Ref.	Description of matter	Current Position	RAG
Planning Policy			
HE 4.1.1	Role of NPS EN-1	It is agreed that the relevant National Policy Statement ('NPS') for the Proposed Development is the Overarching National Policy Statement for Energy (EN-1) (2011) and represents the primary policy basis for the determination of the Application (as set out in the Planning Statement, Examination Library reference APP-108).	Agreed
HE 4.1.2	The Strategic Road Network for Future and DfT Circular 02/2013	As requested by Highways England in October 2019, a policy review of "The Strategic Road Network: Planning for the Future" and (Department for Transport 'DfT') Circular 02/2013 has been undertaken by the Applicant, as outlined in the applicant's response to AECOM's Technical Note titled 'Aquind Interconnector – SRTM Data Analysis & TA Scoping Note Review' (TN01)(Appendix 1). The Applicant welcomes Highways England review and agreement within their response to AECOM's Technical Note TN01, as set out within AECOM Technical Note TN03, titled 'Aquind Interconnector-Review WSP TN HE01 & HE02' (TN03)(Appendix 3), that a suitable policy review in respect of the Strategic Road Network has been provided by the Applicant. (AECOM acting for Highways England).	Agreed

4.2. PROPOSED WORKS – HDD CONSTRUCTION TRAFFIC ROUTING

Table 4.2 – HDD Construction Traffic Routing

Ref.	Description of matter	Current Position	RAG
HDD Construction Traffic Routing			
HE 4.2.1	Access to proposed HDD location	Highways England raised a query in AECOM Technical Note titled ' Aquind Interconnector – Initial Review of Documentation' (TN02)(Appendix 2) relating to access to the proposed HDD location at Farlington Playing Fields and under the A27, known as HDD-3. The Applicant provided a response to the query outlined in Technical Note HE01 (Appendix 4) (paragraphs 2.1.1.1 – 2.1.1.5). AECOM Technical Note TN03 advises that this is acceptable. Highways England's view, as expressed in AECOM Technical Note TN03 (Appendix 3) is that all heavy vehicles accessing site HDD-3 should do so under traffic management control. Paragraph 3.4.8.1. of the FCTMP (Document reference: 6.3.22.2 to be submitted at deadline 8) have been updated to outline how Heavy Goods Vehicles will access HDD-3 and what traffic management measures are in place. Highways England, view is that the measures outlined within the FCTMP are acceptable and this matter is now agreed between the Parties.	Agreed
4.2.2	Use of Laybys	Hampshire County Council have confirmed that their Hulbert Road layby facility can be used to hold HGV's associated with the construction of the Convertor station prior to arriving on site. This will negate the need to utilise laybys on the SRN as part of a managed access strategy	Agreed

Ref.	Description of matter	Current Position	RAG
		although clearly, they can be used for statutory breaks by HGV's travelling to the converter station. The HGV management strategy within the FCTMP will be updated to reflect this amendment. Highway England have considered these proposals and are in agreement with the approach outlined above.	

4.3. ABNORMAL LOADS

Table 4.3 – Abnormal Loads

Ref.	Description of matter	Current Position	RAG
Abnormal Loads			
HE 4.3.1	Area of study relevant to HE	Highways England has reviewed the updated Framework Construction Traffic Management Plan (FCTMP) (REP6-032) and are satisfied with the information provided with regard to the management of Abnormal Loads and standard class Heavy Goods Vehicles as it relates to the Strategic Road Network. These management measures are secured in the Framework Traffic Management Strategy (FTMS) (REP6-030) and would be secured by Requirement 19 of the dDCO (REP7-013). Highways England have asked for further confirmation as to the approach to the management of standard HGV's access to Farlington Playing Fields. Both parties have agreed that at Farlington Playing Fields, HGV access will occur under the control of construction traffic marshals and this will be secured through an amendment to the FCTMP to be submitted at deadline 8.	Agreed

4.4. COLLISION DATA

Table 4.4 – Collision Data

Ref.	Description of matter	Current Position	RAG
Collision Data			
HE 4.4.1	Collision Data	Highways England requested further information from the Applicant with regards to collision data at the following junction of the Strategic Road Network • A3 (M) Junction 2; • A3 (M) Junction 3; and • A27 / A2030. The Applicant submitted the additional information on this topic in the 'Technical Note providing a review of Collison Data at Strategic Road network junctions' (REP7-039) Following review of the additional information submitted Highways England have reviewed the models and are satisfied that they are accurate. The impact on queuing is minimal and can remain within the length of the slip road. Highways England are satisfied that this matter is now resolved between the Parties. Measures are set out within the FCTMP and the FTMS providing a flexible approach to dealing with traffic management. This includes where necessary provision of management measures to warn drivers of effects of construction	Agreed

Ref.	Description of matter	Current Position	RAG
		traffic and provide information as necessary. This will ensure that where necessary, the overall strategy can respond to changes in traffic conditions when they arise. This will require close engagement with the relevant highway authorities and if necessary, Highways England.	

4.5. SITE ACCESS ARRANAGEMENTS FOR HDD – LANGSTONE HARBOUR

Table 4.5 – Site Access Arrangements

Ref.	Description of matter	Current Position	RAG
Site Access Arrangements			
HE 4.5.1	Construction Traffic – Farlington Playing Fields	Access into Farlington Playing Fields would be via the existing priority-controlled junction just north of the signal-controlled junction with Walton Road. The Applicant considers this junction to be an acceptable route for HGV traffic associated with the construction of the Onshore Cable Corridor. Highways England has confirmed within AECOM Technical Note HE03 (Appendix 6) that access via this route by oversized vehicles would be required to take place under traffic management control, which is acceptable to the Applicant. The required controls will be secured in the FCTMP(REP6-030) in accordance with requirement 19 of the DCO (REP7-013) and the Construction Environment Management Plan in accordance with requirement 15 of the dDCO (REP7-013).	Agreed
HE 4.5.2	Adequacy of current layout junction – Access into Farlington Playing Fields	Swept path analysis has been undertaken of the entrance and egress routes into Farlington Playing Fields as illustrated in WSP Drawing 0616-ATR-002, within Appendix 2 of Technical Note HE01 (Appendix 4). The drawing shows that ingress and egress from the site is feasible by straddling the offside and nearside lanes on the northbound carriageway of the A2030 Eastern Road, and by returning to the A2030 using what is currently an 'in only' access into the loop road serving the Holiday Inn and Petrol Filling Station. Use of this access road in a contra-flow direction would only be possible under traffic management conditions. Highway's England's view as outlined in AECOM's Technical Note TN03 (Appendix 3), is that this approach is acceptable to Highways England. This matter is now agreed. .	Agreed
HE 4.5.3	Capacity Impact on existing junctions – right turn into Farlington Playing Field site	Discussions regarding the likelihood of adverse impacts on the A2030 Eastern Road/ Walton Road signal-controlled junction and the A27 Havant Bypass/ A2030 Eastern Road have concluded that there should not be any adverse impacts as a result of queuing at this junction. Highways England agree that for the purpose of assessing the impact on the Strategic Road Network (SRN) junction capacity modelling is not required at the junction of A27 Havant Bypass / A2030 Eastern Road.	Agreed
HE 4.5.4	Capacity Impact on existing junctions – construction vehicles	Section 2.8.6 of the FCTMP (REP6-030), clearly identifies the vehicles that will be used for HDD works. Following on from further discussions between the Applicant and Highways England this matter is now agreed between the parties.	Agreed
HE 4.5.5	Capacity Impact on existing junctions – construction vehicles movements	The Applicant welcomes Highways England's review of the construction traffic movements, as stipulated in the FCTMP (REP6-030) and confirmation that it is acceptable.	Agreed

Ref.	Description of matter	Current Position	RAG
		Highways England welcome the commitment made in sections 3.3.2 – 3.3.6 of the FCTMP(REP6-030) which seeks to avoid the generation of additional heavy goods vehicle movements to and from the work sites during the weekday peak hours. This matter is now agreed.	
HE 4.5.6	HGV Swept Path Plots	Further clarification regarding the HGV swept path plots to show that standard sized HGVs can access the playing fields was requested by Highways England within an email dated 4 May 2020. The Applicant responded to this query in the Technical Note titled 'HE02 - Response to Highways England Comments ' (Appendix 5) under item 2 (paragraph 2.2.1.1) and consequently considers the additional swept path analysis provided is acceptable. The Applicant welcomes Highways England's confirmation that this is acceptable, noting that movement by HGVs would need to be undertaken under traffic management measures. Highways England have reviewed the additional information provided by the Applicant and are satisfied with the additional swept path analysis provided. This matter is now agreed between the parties.	Agreed
HE 4.5.7	HGV – Workforce related trips	Highways England requested further clarification with regard to the number of vehicles likely to require access to the Farlington Playing fields site and whether this number includes HGVs or workforce-related trips. *"Please confirm whether the 1-2 vehicles per hour referred to at para 7.3.1.5 includes workforce-related trips or whether these are just HGV trips. If these are just HGV trips, please provide an estimate of workforce-related vehicle movements."* The Applicant has responded to this comment under Item 3 (paragraph 2.3.1.1) of Technical Note (HE02) (Appendix 5). Following receipt and a review of AECOM TN03 (Appendix 3), this matter is now agreed between the parties.	Agreed
H.E 4.5.8	Transport Modelling – A3(M) Junctions 2 and 3	Highways England has sought further clarification with regard to the impact of the proposals on A3(M) Junctions 2 and 3. The Applicant is in the process of resolving and will provide further detail to HE regarding the query outlined below. The Applicant is committed to ongoing discussions in terms of agreeing the implication of the scheme at these junctions. This is likely to require formulisation through the protective provisions of the dDCO to prevent peak hour trips through these junctions. *"In respect of A3(M) Junctions 2 and 3, are you aware of any committed developments in the vicinity, and/or any proposed schemes to upgrade these junctions and, if so, how have you accounted for this in the modelling."* *"With regard to A3(M) Junctions 2 and 3, lane simulation should be used within ARCADY as a sensitivity test and these sensitivity tests should be undertaken before the results of the modelling are accepted"* and *"Further work should be carried out at A3(M) Junction 2 and Junction 3 to quantify the impact of Aquind Interconnector for the following scenarios:* • *Without the committed development referred to and without its mitigation scheme; and* • *With the committed development and its mitigation scheme".* The Applicant issued a Technical Note titled 'HE03 - Response to Highways England Technical Note TN03' (HE03) (Appendix 6) to Highways England on 11 November 2020 addressing the Sensitivity test modelling of Junction 2 and 3, A3 (M) in ARCADY using Lane Simulation and identifying the impact of the Aquind Interconnector on committed developments by way of LINSIG modelling. The Applicant welcomes Highway's England's review and confirmation that the details provided conclusively demonstrate that these junctions would remain within capacity during the construction phase. Following receipt of comments from Highways England, the Applicant submitted a revised Technical Note (HE03) (Appendix 6) on 17 December 2020. Initial feedback was given at a meeting held on 21 January 2021, which required the submission of further modelling to deal with queuing on the circulatory carriageway, which was submitted in Technical Note HE03, which was contained with Appendix 2 of the Supplementary Transport Assessment Addendum which was submitted	Agreed

Ref.	Description of matter	Current Position	RAG
		at Deadline 7 (REP7-065). The review of the material submitted as outlined in the AECOM Technical Note TN04 (Appendix 4) confirms that these are credible model runs which show acceptable outcomes. Highways England agree that the recommendations contained in AECOM Technical Note TN04 (Appendix 4) have been addressed in the additional text introduced at section 7.3 of the FCTMP and section 2.6 of the FTMS and this matter is therefore now agreed.	
4.5.9	Construction Traffic Access to Farlington	Highways England has sought clarity on the impact of U turns at the A27 / A2030 junction, generated by users of the Farlington access, as a result of traffic wishing to return to north. The Applicant has provided further clarity on the matter as outlined Technical Note HE01 (Appendix 4) that all construction traffic will arrive and depart from the south. Highways England are satisfied with this proposal and the matter is now agreed between the parties.	Agreed

4.6. MANAGEMENT OF CONSTRUCTION TRAFFIC

Table 4.6 – Management of Construction Traffic

Ref.	Description of matter	Current Position	RAG
Management of Construction Traffic			
HE 4.6.1	Framework Construction Traffic Management Plan	The Applicant welcomes Highways England's full review and confirmation that the FCTMP (REP6-030) is acceptable. Highways England have provided their review of the FCTMP on Monday 16 November 2020 to the Applicant. Highways England have expressed a view that it would be beneficial to all effected parties to enter into a highways specific statement of common ground between Highways England, Hampshire County Council, Portsmouth City Council and the Applicant to agree a way of working that will minimise adverse traffic impacts during the construction period across all road networks. This agreed way of working could also set out a framework of consultation and engagement with highway authorities to ensure minimal disruption to any approvals/notification process to facilitate AQUIND activities requiring road space. The display of messages on Variable Message Signs (VMS) that sit on the SRN can form part of a wider strategy as a potential option but will require further consultation and formal approvals from Highways England before it can be considered an agreed proposal. In a meeting held on the 14 January 2021 it was agreed that it was not considered necessary to prepare a separate triparty SoCG on cross boundary strategic transport matters. Therefore, the individual SoCG's with each party will close out any specific authority related concerns including those specified (consultation and engagement regarding works disruption, use of variable message signs).	Agreed

4.7. TRAFFIC FLOW IMPACTS

Table 4.7 – Traffic Flow Impacts

Ref.	Description of matter	Current Position	RAG
Traffic Flow Impacts			
HE 4.7.1	Traffic flow - Methodology	Discussions with regards to the methodology, traffic assessment and junction assessments as set out by the Applicant in Technical Note HE01 (pages 9-6 – 9-10) (Appendix 5) required additional information to be submitted to Highways England. The Applicant provided additional information in Technical Note (HE03) (Appendix 7) with regard to traffic and Junction assessments. Highways England's review confirms that the information provided is acceptable. See item 4.5.9 above.	Agreed
H.E 4.7.2	Traffic Flows - ARCADY model	Highways England requested further information with regards to the ARCADY traffic Modelling with regards to the A3(M) Junctions 2 and 3. The Applicant has reviewed and has provided a response under Item 4 (paragraph 2.4.1.1) Technical Note (HE02) (Appendix 6). The Applicant issued a Technical Note (HE03) (Appendix 7) to Highways England on 11 November 2020 clarifying the irregularities within the traffic modelling of Junction 2 and 3, A3 (M) in ARCADY and the further modelling requested dealing with the position both with and without committed development schemes and the mitigation provided. Highways England's review confirms that the information provided is acceptable. See item 4.5.9 above.	Agreed
HE 4.7.3	Traffic Flows – Units used	Highways England sought further detail with regard to peak period traffic flows as a result of the construction of the Onshore Cable Corridor. The Applicant has provided a response under Item 6 (paragraph 2.6.1.1) of Technical Note (HE02) and await confirmation from Highways England that the proposals as outlined in the Applicants response to AECOM Technical Note TN01 and TN02 is acceptable. As above, Technical Note (HE03) provides further detail in Section 3 on the peak period traffic flows as a result of the construction Onshore Cable Corridor. The Applicant welcomes Highways England's review and confirmation that they are satisfied with the details provided address in full their queries with regard to peak traffic flows.	Agreed

4.8. DURATION OF WORKS

Table 4.8 – Duration of Works

Ref.	Description of matter	Current Position	RAG
Duration of Works			
4.8.2	Construction Programme - Duration of works at HDD site	Highways England requested further detail with regard to whether the 31 weeks duration of works at site HDD3 and the 26 weeks at site HDD4 listed in Table 4 of Technical Note HE01 (Appendix 5) will be sequential (i.e. 56 weeks in total) or concurrent and/or provide an estimate of how many weeks the HDD site at Farlington Playing Fields will be operational. The Applicant has responded to this comment under Item 1 (paragraph 2.1.1.1) of Technical Note (HE02) (Appendix 6). This has been acknowledged by Highways England within AECOM TN03 (Appendix 3), who have recommended that once a contractor has been appointed, details of the construction phasing and duration of works should be provided. This recommendation by Highways England has been captured in section 3.3.5. of the FCTMP (REP6-030). This matter is now agreed between the parties.	Agreed

4.9. MODELLING

Table 4.9 – Modelling

Ref.	Description of matter	Current Position	RAG
Modelling			
HE 4.9.1	SRTM Modelling methodology	Highways England requested further information from the Applicant with regard to the STRM modelling undertaken and the extent to which these have been agreed with the local authorities. The Applicant has responded to this query under Item 7 of Technical Note (HE02) paragraphs 2.7.1.1 – 7.1.3 (Appendix 6). The Applicant sent a coding note to Portsmouth City Council (PCC) on the 12 June 2019 and followed up in an email 21 June2019 to PCC outlining the STRM Modelling methodology. No further comment was provided by PCC on the proposed methodology. In an email dated 21 July2019 the Applicant outlined to Hampshire County Council (HCC) the rationale behind the SRTM modelling and advised that the modelling would progress as programmed. No further comment from HCC with regard to the proposed methodology was received by the Applicant. Having reviewed AECOM TN03 (Appendix 3) this matter is now agreed with Highways England.	Agreed
4.9.2	Junction Assessment Cordon	Following clarification provided within Technical Note HE02 (Appendix 6), given the limited timescales over which any increases in traffic arising the Proposed Development would apply, Highways England confirmed within the AECOM TN03 (Appendix 3) that it is not necessary to assess the following junctions that form part of the Strategic Road Network: - • A27 / A2030 • M27 Junction 12 grade separated junction; • M27 Junction 12 roundabout junction with A3 Southampton Road; • A3 (M) Junction 4; • A3 (M) Junction 5; and • The dumb-bell junction linking A3 (M) junction 5 with the A27 east.	Agreed

4.10. CUMULATIVE IMPACT OF AQUIND INTERCONNECTOR WITH M27 J4-J11 SMART MOTORWAY PROJECT

Table 4.10 – Cumulative Impact of Aquind Interconnector with M27 J4-11 Smart Motorway Project

Ref.	Description of matter	Current Position	RAG
Cumulative Impacts			
HE 4.10.1	Potential cumulative impact of this project with the M27 J4 – J11 Smart Motorway Project	No reference is made in either the Environmental Statement Traffic and Transport Chapter (APP-137) or the Transport Assessment (APP-448) to the potential cumulative impact of the Aquind Interconnector with the M27 J4 – J11 Smart Motorway scheme, should their construction periods overlap. The Applicant's technical note HE01 (Appendix 5) states that the installation of the Onshore Cable Corridor is unlikely to affect the smart motorway works. The Onshore Cable Corridor would pass under the SRN at the section of the A27 Havant Bypass next to Farlington Playing Fields and the grade separated roundabout interchange with the A2030 Eastern Road which is approximately 10km east of Junction 11 and not	Agreed

Ref.	Description of matter	Current Position	RAG
		within the scheme extents of the smart motorway works on the M27. Consequently, the Applicant states that the works would not impact on the smart motorway scheme and the effect of any temporary traffic redistribution would be limited and has been substantiated by the numbers highlighted in Table 1 of HE01 (Appendix 5). The Applicant states that the majority of construction traffic associated with the Onshore Cable Corridor would only travel between the cable gangs and the site compound using the A3(M) and A27 Havant Bypass as required and that the M27 would not be affected other than in relation to occasional material deliveries. Notwithstanding this, Highways England's position is that the Applicant should work collaboratively with Highways England to co-ordinate matters such as temporary traffic signage in the event that the construction phases of the M27 J4 – J11 Smart Motorway Project and Aquind Interconnector scheme overlap, noting that this is unlikely given that the M27 scheme is currently programmed to be completed in Winter 2021, notwithstanding that document Environmental Statement – Volume 1 – Chapter 3 Description of the Proposed Development (APP-118) suggests construction commencing in Q3 2021. This matter is now agreed between the parties.	

4.11. GEO-TECHNICAL

Table 4.11 – Geotechnical

Ref.	Description of matter	Current Position	RAG
Geotechnical			
HE 4.11.1	**Geotechnical Surveys**	As a result of ongoing discussion with Highways England, most recently in September 2020, additional Geo-technical work was commissioned in accordance with Highway England's 's technical approval process in relation to HDD tunnelling under the A27. A Geo-technical report was submitted to Highways England for review and consideration on 3 December 2020. Highways England have reviewed the report and issued the Applicant a Geo-technical certificate on the 14 January 2021. The Geo-technical certificate indicates Highway England approval, and it has been agreed between both Parties that no further Geo-technical surveys or physical ground investigations are required.	Agreed
4.11.2	**Protective Provisions**	Discussions have now concluded between the parties in relation to the inclusion of protective provisions within the dDCO, and where they are included, they are in an appropriate form so as to ensure protection of Highways England assets which could be affected by the construction of the Proposed Development. The Parties have now come to an agreement with regard to the wording of the protective provisions.	Agreed
4.11.3	**Processes – Geotechnical work**	During the meeting with Highways England in January 2020, it was agreed by both parties that the preferred approach would be to obtain all relevant information with regards to the Geo-technical assessments now and remove the need for protective provisions within the dDCO. Meaningful discussion have been had with Highways England Geotechnical Specialists with regards to the technical approval for the HDD tunnelling under the A27. The approach will follow the combined stage approach within CD622 (Highways England Managing Geotechnical Risk) with one combined submission of Statement of Intent, Geotechnical Investigation Report and Geotechnical Design Report. This document submitted to Highways England on 3 December 2020 outlines the ground characteristics, engineering proposals and their interaction. The proposal is currently a small diameter at approximately 13mbgl+ under the A27. The content assures Highways England that the risk to the A27 is	Agreed

Ref.	Description of matter	Current Position	RAG
		low/negligible. The document additionally sets out the key risk mitigation; ground surface settlement monitoring pre, during and post works which shall satisfy Section 7 of CD622. Records will be maintained through construction for a close-out Geotechnical Feedback Report for Highways England. Discussions to date have formed agreement by both parties for this approach.	

4.12. LAND RIGHTS

Table 4.12 – Land Rights

Ref.	Description of matter	Current Position	RAG
Land Ownership			
HE 4.12.1	Scope of land rights	The Applicant issued draft indicative Heads of Terms to Highways England on 06 April 2020 for an Option for an easement required under the A27. The land forming the A27 is registered under Her Majesty's Land Registry title ref. HP109205 and is shown as plot reference 7-22 on the Land Plans (document ref. 2.2) submitted as part of the Applicant's application for Development Consent. The parties are in agreement in relation to the scope of the rights required and the area over which the rights are to be agreed is necessary for the construction, maintenance and operation of the Proposed Development.	Agreed
HE 4.12.2	Land rights – timescale for agreement,	In October 2020, Highways England appointed a member of their property team in relation to progressing the Heads of Terms issued by the Applicant in April 2020. On 9 November 2020 the Applicant issued a draft Option Agreement and Deed of Grant (i.e. easement) to Highways England for further discussion alongside the Heads of Terms. The parties agree the granting of the rights will not have any impacts Highways England's duties as a highway authority or their ability to operate, manage and improve the highway network. The Heads of Terms were agreed between the parties on 23 February 2021 and the parties continue to engage to agree the Option Agreement and Deed of Grant. It is expected the Option Agreement and Deed of Grant will be agreed between the parties shortly after Deadline 9.	Agreed

4.13. DCO

Table 4.13 – DCO

Ref.	Description of matter	Current Position	RAG
Development Consent Order			
HE 4.13.1	DCO – Relevant Highway Authority	The DCO as currently drafted does not include Highway England within the definition of the 'Relevant Highway Authority'. Whilst Highway England have previously expressed to the Applicant that Highway England are of the opinion that they should be included within the definition of 'Relevant Highway Authority' within the DCO. Highway's England are now of the opinion that this is no longer considered to be necessary. Following on from discussions with the Applicant and further measures added to the FCTMP and FTMS, Highways England is satisfied that there is an acceptable protocol that allows for engagement with Hampshire County Council and Portsmouth City Council in the event that any temporary management measures need to be introduced on the Strategic Road network to manage traffic effects during the delivery of the Proposed Development.	Agreed

Ref.	Description of matter	Current Position	RAG
		Any matters that may be identified in the FCTMP and the FTMS that require approval on the Strategic Road Network managed by Highways England will require additional consultation by AQUIND and formal approvals sought that can only be given by Highways England. Highways England recommends early engagement on any such matters to avoid any unnecessary delay. This has now allowed agreement to be reached on this matter.	

5. SIGNATURES

Ref.	Highways England	AQUIND (the Applicant)
Signature	[redacted]	[redacted]
Printed Name	Patrick Blake	
Title	Area 3 Spatial Planner	MANAGING DIRECTOR
On behalf of	Highways England	AQUIND Limited
Date	25 February 2021	25 FEBRUARY 2021

Appendix 1 – AECOM TN01

Technical Note 01

Project:	**Highways England Spatial Planning Arrangement 2016-2020**	Job No:	**60600479 / DF006.001**
Subject:	**Aquind Interconnector – SRTM Data Analysis & TA Scoping Note Review**		
Prepared by:	**Andrew Cuthbert**	Date:	**8th October 2019**
Checked by:	**Kelly Davis**	Date:	**10th October 2019**
Verified by:	**Liz Judson**	Date:	**11th October 2019**
Approved by:	**Andrew Cuthbert**	Date:	**14th October 2019**

Executive Summary

Following a review of the Solent Sub-Regional Transport Model (SRTM) Data Analysis Report, prepared by WSP in support of the proposed Aquind Interconnector on-shore works, AECOM recommend that the following information and analysis should be included in the Transport Assessment.

1. The A27/ A2030 grade separated junction should be included in the study area and the impact of the scheme at this junction should be examined. Alternatively, justification should be provided for its exclusion (para 2.13).
2. The existence or otherwise of a construction site access on the east side of the A2030, to the north of its junction with the A27 should be confirmed (para 1.10). If a site access is proposed here, further details should be provided as follows:
   - Its proposed layout, including HGV swept path analysis;
   - Its capacity tested using a PICADY model;
   - Confirmation that the risk of a queue back from this junction to the A27/ A2030 grade separated junction is minimal; and
   - If this is not the case, details of traffic management measures designed to minimise such queueing.
3. Details of the performance of the following junctions in each assessment scenario, extracted from the SRTM runs already undertaken (para 2.13):
   - A3/ A27 Portsbridge roundabout;
   - M27 Junction 12 grade separated junction;
   - M27 Junction 12 roundabout junction with A3 Southampton Road/ Western Road;
   - A3(M) Junction 4;
   - A3(M) Junction 5; and
   - The dumb-bell junction linking A3 (M) J5 with the A27 east towards Havant.
4. Further details of the performance of the following junctions, for each scenario, extracted from the SRTM runs already undertaken, to include arm-by-arm analysis (including circulatory stop lines on signal-controlled roundabouts) of capacity and queueing (para 2.12)
   - A3(M) Junction 2;
   - A3/ Dell Piece (west)/ Catherington Lane junction;
   - A3(M) Junction 3;
   - Hulbert Road/ Frendstaple Road/ Tempest Avenue junction;
   - A3 Southampton Road/ London Road/ Spur Road junction; and
   - B2177 Portsdown Hill/ Bedhampton Hill junction.

T +44 (0)1245 771200
www.aecom.com

Saxon House
27 Duke Street
Chelmsford, Essex
CM1 1HT

5. Where these SRTM results disclose a potentially severe impact, detailed junction capacity models using industry-standard software such as ARCADY or LinSig should be provided so as to examine in more detail the performance of the junction under the traffic flows predicted (para 2.14).
6. Clarification should be provided on the durations over which the impacts reported are likely to arise (para 2.6).

AECOM therefore advise Highways England to continue to work with WSP, Hampshire County Council, Portsmouth City Council and other stakeholders to resolve the issues identified, with a view to reaching an agreed position in advance of the forthcoming DCO Hearing.

1. Introduction

1.1. This Technical Note documents the results of a review carried out by AECOM, on behalf of Highways England, of a number of documents supplied by WSP on 12th September 2019 in relation to the potential impact on the transport network of the construction phase of the proposed Aquind Interconnector. These documents have been provided prior to the submission of a Development Consent Order (DCO) application.

1.2. The Aquind Interconnector is a proposed cross-channel electricity cable, which will make landfall at Southsea (Portsmouth) and access the National Grid at a converter station at Lovedean, to the north of Denmead. The cable will cross the A27 Trunk Road to the east of its junction with the A2030 Eastern Road.

1.3. AECOM understand that the engineering aspects of providing a cable crossing at this point are to be dealt with by Highways England's maintaining agent and that AECOM's input into the process will relate primarily to the traffic capacity and road safety implications of the wider project.

1.4. It is evident that this proposal is at a relatively early stage. The document currently under review is the second of a series of documents which are likely to come forward for review as part of the DCO application process. These can be summarised as:

- Preliminary Environmental Information Report (PEIR). Consultation was held on this document during March/ April 2019. Although this consultation has now closed, the PEIR will contain material we will find useful in understanding the potential impact of this proposal on the Strategic Road Network (SRN).
- The SRTM Data Analysis Report (SRTM DAR). This provides a summary of the output from a run of the Solent Area Sub-Regional Transport Model (the SRTM) and provides details of the potential impact of the proposals at a number of locations on and close to the SRN within the South Hampshire area.
- The SRTM DAR contains a copy of the draft Transport Assessment Scoping Note (TASN).

The SRTM DAR also refers to the following documents which are yet to be produced:

- The Transport Assessment (TA);
- The Environmental Impact Assessment (EIA) Transport & Traffic Chapter;
- The Traffic Management Strategy (TMS).

1.5. The purpose of this initial review is to identify potential impacts on the SRN and advise Highways England on the extent of technical analysis required to allow these impacts to be robustly quantified in the forthcoming TA and to identify any mitigation that might be necessary.

1.6. The SRN in this vicinity comprises the following:

- The M27 Motorway;
- The A27 Trunk Road; and
- The A3(M) north of its junction with the A27.

1.7. AECOM assume that the whole of the following form part of the Local Road Network (LRN), managed by either Hampshire County Council or Portsmouth City Council:

- The M275 Motorway; and
- The A3 throughout the study area.

1.8. As part of our initial review of the documents, AECOM identified the following locations that might be of interest and could possibly be of concern to Highways England:

- A3 (M) Junctions 2, 3, 4 and 5;
- The dumb-bell junction linking A3 (M) J5 with the A27 east towards Havant;
- The A3/ Dell Piece (west)/ Catherington Lane junction in Horndean (controlling access to the LRN from A3(M) J2);
- The Hulbert Road/ Frendstaple Road/ Tempest Avenue junction in Waterlooville (controlling access to the LRN from A3(M) J3);
- The B2177 Portsdown Hill Road/Bedhampton Road/ Maylands Road/ Bedhampton Hill roundabout at Bedhampton (controlling access to the LRN from A3 (M) J5);
- The A27/ A2030 Eastern Road grade-separated junction (NB this appears not to be included in the junctions so far identified for assessment in the SRTM DAR);
- The A3/ A27 Portsbridge grade-separated roundabout; and
- M27 Junction 12.

1.9. These locations are illustrated on the figure at Appendix B of the SRTM DAR, a copy of which is reproduced at Figure 1 on the following page.

1.10. Examination of this Figure shows what looks like a works site access located off the A2030 immediately to the north of its junction with the A27, which might have the potential to give rise to an impact at the A27/ A2030 junction itself.

1.11. A discussion of the key features of the SRTM DAR likely to be of interest to Highways England follows, together with some recommendations for further work.

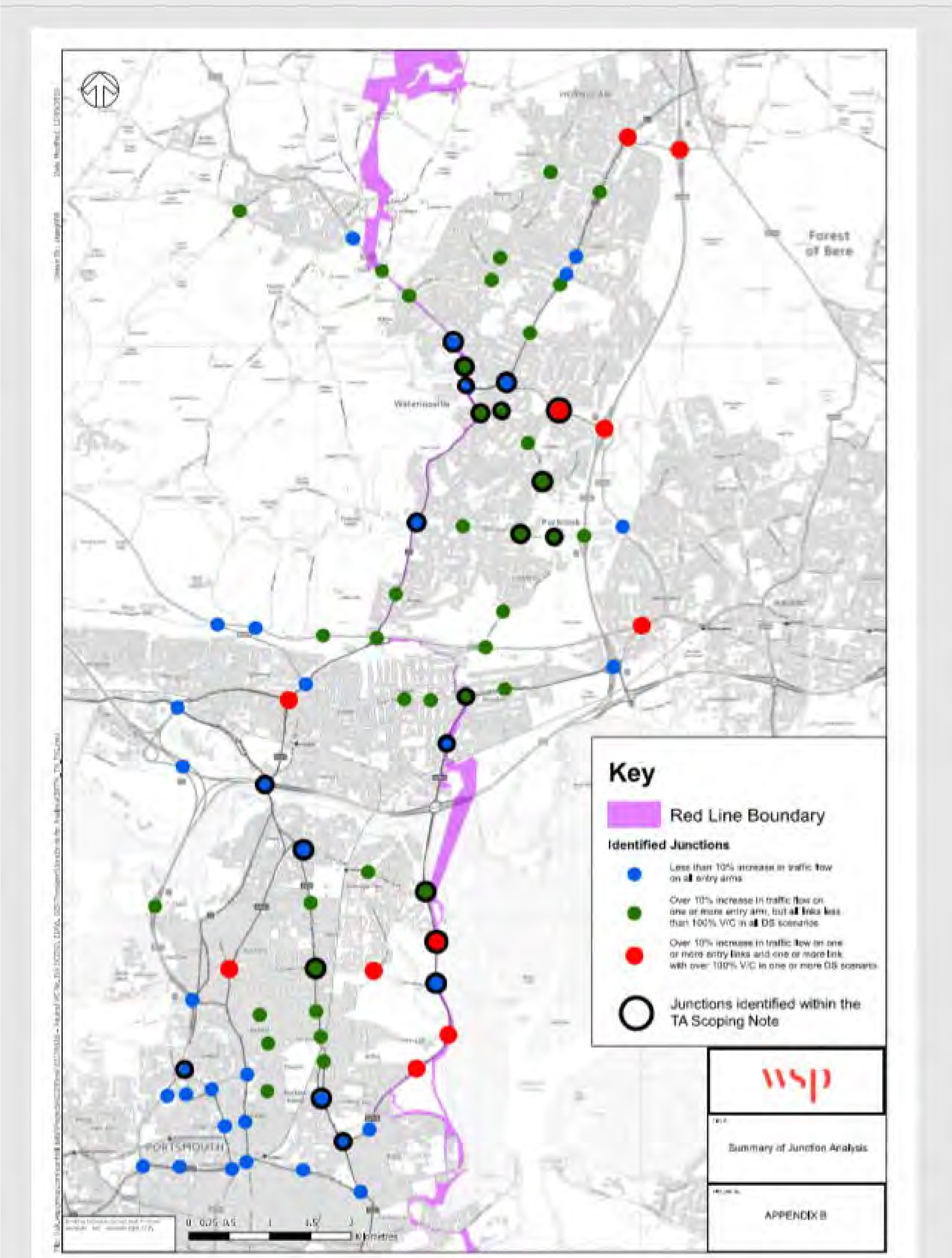


Figure 1: Junctions in the Study Area

(Source: SRTM DAR Appendix B)

2. The SRTM Data Analysis Report

2.1. The SRTM Data Analysis Report (the SRTM DAR) was produced in September 2019 and it follows on from (and includes as an appendix) the Draft Transport Assessment Scoping Note (TASN) dated June 2019. Both documents refer to the Preliminary Environmental information report (PEIR) which was issued in February 2019 as part of a Consultation exercise. AECOM were not involved in this study at that stage. Whilst the consultation on the PEIR is now closed, AECOM will use it as a source of data to assist in the further assessment of the proposed Interconnector. This current TN01, however, focuses on the SRTM DAR and the TASN.

2.2. The TASN contains an overview of a detailed assessment of construction traffic and construction workforce traffic generation assumptions. These assumptions are not tested here (but could be, if required, as part of a later stage of the work) but taken at face value for the purpose of this review. They can be summarised as follows:

- The converter station at Lovedean is assumed to generate:
  - 45 HGV two-way construction traffic movements per day;
  - 55 non-HGV two-way construction traffic movements per day;
  - 150 staff working on the converter station;
- The sites will operate between 07:00 and 19:00 Monday to Friday;
- Construction site traffic will be spread equally throughout the day, except for HGVs which will avoid the peak hours of 08:00 – 09:00 and 17:00 – 18:00.
- The workforce is assumed to arrive at 07:00 and 11:00 and leave at 15:00 and 19:00 and workforce shifts will be organised to avoid the peak hours.
- The trip distribution for the workforce is based on 2011 census journey-to-work data for a local MSOA and results in some 35% of workforce trips (and all HGV trips) assigning via A3(M) Junction 2.
- This results in a particular concentration of traffic at A3(M) Junction 2, with construction worker traffic predominantly using Dell Piece (west) to access the compound site amounting to 104 two-way trips per day.
- The cable route broadly follows the A2030 through Portsmouth and the A3 between Cosham and Waterlooville. Construction is assumed to take place over a series of 100m-long sections, up to six of which could be active at any one time. Each section would typically generate:
  - 4 HGV two-way construction traffic movements per day;
  - 2 non-HGV two-way construction traffic movements per day; and
  - 6-8 workers, which will travel to the site using Light Goods vehicles (LGVs) included in the totals above.
- These would be served from two construction compounds at locations yet to be confirmed in in the general vicinity of:
  - The Lovedean Converter Station; and
  - The Anchorage Park industrial estate.

2.3. It is evident from the SRTM DAR that this traffic has been assigned to the road network using the SRTM which has also been used to assess the impact of temporary reductions in traffic capacity resulting from traffic management measures (including some road closures) throughout the study area. The temporary traffic management measures are predicted to result in some re-assignment of existing traffic away from the cable corridor route whilst construction is taking place.

2.4. The SRTM DAR identifies 50 junctions in the study area for further investigation (from an initial long list of 85) and this includes 22 that had already been identified in the TASN. These were then filtered using the following significance thresholds:

- An increase in traffic flows of over 10% on any junction entry or circulatory arms;
- One or more junction entries with a V/C (RFC) greater than 100% in the assessment.

2.5. These are tabulated on pages 7 & 8 of the SRTM DAR and their locations are illustrated on Figure 1 of this TN.

2.6. The operation of the junctions has been assessed using the SRTM in an assessment year of 2026 in a number of scenarios. AECOM assume that this is the year in which peak construction activity will occur. No information is given in the SRTM DAR as to the duration of these effects, although this may be stated in the PEIR, which AECOM have not yet reviewed.

2.7. A detailed commentary on the operation of each junction, for which the SRTM DAR identified that a significant impact was likely, follows. The junctions identified are listed below and those which also have the potential to cause an impact on the SRN are identified by the use of bold text:

- **Hulbert Road/ Frendstaple Road/ Tempest Avenue roundabout**;
- A2030 Eastern Road/ Airport Service road junction;
- **A3/ Dell Piece (west)/ Catherington Lane**;
- **B2177 Portsdown Hill Road/ Bedhampton Hill junction;**
- **A3(M) Junction 2**;
- **A3(M) Junction 3**;
- **A3 Southampton Road/ London Road/ Spur Road**;
- A2030 Eastern Road/ Hayling Avenue;
- A2030 Eastern Road/ Tangier Road/
- Stubbington Avenue/ Angerstein Road; and
- Burrfields Road/ Dundas Lane.

2.8. These junctions are identified by the use of red circles on Figure 1 of this TN.

2.9. The SRTM DAR gives details of key traffic flow increases, some of which are significant (the highest being 197 additional vehicles in the peak hour).

2.10. The SRTM also contains a commentary of the impact of these traffic flow increases on the capacity of these junctions with V/C ratios (RFCs) quoted for selected junction approaches.

2.11. Unfortunately for this review, these results are not tabulated systematically, and no information is provided on predicted queue lengths. It is therefore not possible at this stage to comment on the potential for the flow and V/C increases reported to have a ‘severe impact’ on the SRN, such as would arise if any of the following were to occur:

- A queue on an A27 or A3(M) slip road tailing back to the main carriageway of the SRN bringing queueing traffic into close proximity with high speed traffic on the main line carriageway;
- A queue on the circulatory carriageway of a signal-controlled roundabout exceeding the capacity of the circulatory to accommodate it and blocking back across a preceding junction entry or exit;
- A queue from a junction on the LRN with the potential to tail back to an SRN junction.

2.12. However, there do appear to be a number of potential impacts reported which could affect the SRN either directly or indirectly. These include:

Table 1: Potential impacts on SRN Junctions derived from SRTM DAR

Junction	Approach	Traffic Flow increase	Time period	Potential to affect SRN
A3(M) Junction 2	A3(M) northbound off-slip	159 vehicles	PM peak	A3(M) northbound main carriageway
A3(M) Junction 3	Hulbert Road	72 vehicles	PM peak	Unclear
B2177 Portsdown Hill Rd/ Bedhampton Hill junction	B2177 Portsdown Hill Road	131 vehicles	AM peak	Unclear
A3/ London Rd/ Spur Rd roundabout	Spur Road	97 vehicles	PM peak	A27/ A3 Portsbridge roundabout
A3/ Dell Piece (west)/ Catherington Lane	Dell Piece (west)	99 vehicles	PM peak	A3 (M) Junction 2
Hulbert Rd/ Frendstaple Rd/ Tempest Ave roundabout	Frendstaple Road	197 vehicles	AM peak	Unclear

2.13. There are, however, a number of locations on or close to the SRN where the impact of the Aquind Interconnector is not discussed in the SRTM DAR. These include:

- A27/ A2030 grade separated junction;
- A3/ A27 Portsbridge roundabout;
- M27 Junction 12 grade separated junction;
- M27 Junction 12 roundabout junction with A3 Southampton Road/ Western Road;
- A3(M) Junction 4;
- A3(M) Junction 5; and
- The dumb-bell junction linking A3 (M) J5 with the A27 east towards Havant.

2.14. There is also a question over the ability of the SRTM to model, at a detailed (rather than a strategic) level, impacts of traffic flow increases and traffic management measures at individual junctions and it may be necessary to seek runs of detailed junction capacity models such as ARCADY or LinSig in order to fully quantify any potential severe impacts identified in the SRTM results..

3. Recommendations for further work

3.1. It is evident from the TASR (which forms an Appendix to the SRTM DAR) that further, more detailed work is to be undertaken in the preparation of the TA. This should be welcomed.

3.2. On the basis of the information available to date, and in order to ensure that all issues likely to be of interest to Highways England are covered, AECOM recommend that the following information and analysis should be included in the TA:

- The A27/ A2030 grade separated junction should be included in the study area and the impact of the scheme at this junction should be examined, alternatively justification should be provided for its exclusion.
- The existence or otherwise of a construction site access on the east side of the A2030, to the north of its junction with the A27 should be confirmed. If a site access is proposed here, further details should be provided as follows:
  - Its proposed layout, including HGV swept path analysis;
  - Its capacity tested using a PICADY model;
  - Confirmation that the risk of a queue back from this junction to the A27/ A2030 grade separated junction is minimal; and
  - If this is not the case, details of traffic management measures designed to minimise such queueing.

- Details of the performance of the following junctions in each assessment scenario, extracted from the SRTM runs already undertaken:
  - A3/ A27 Portsbridge roundabout;
  - M27 Junction 12 grade separated junction;
  - M27 Junction 12 roundabout junction with A3 Southampton Road/ Western Road;
  - A3(M) Junction 4;
  - A3(M) Junction 5; and
  - The dumb-bell junction linking A3 (M) J5 with the A27 east towards Havant.
- Further details of the performance of the following junctions, for each scenario, extracted from the SRTM runs already undertaken, to include arm-by-arm analysis (including circulatory stop lines on signal-controlled roundabouts, if any) of capacity and queueing:
  - A3(M) Junction 2;
  - A3/ Dell Piece (west)/ Catherington Lane junction;
  - A3(M) Junction 3;
  - Hulbert Road/ Frendstaple Road/ Tempest Avenue junction;
  - A3 Southampton Road/ London Road/ Spur Road junction; and
  - B2177 Portsdown Hill/ Bedhampton Hill junction.
- Where these SRTM results disclose a potentially severe impact, detailed junction capacity models using software such as ARCADY or LinSig should be provided so as to examine in more detail the performance of the junction under the traffic flows predicted.

3.3. Clarification should be provided on the durations over which the impacts reported are likely to arise.

4. Conclusion

4.1. In this TN, AECOM has reviewed and commented on the '*SRTM Data Analysis Report'* prepared by WSP in support of the proposed Aquind Interconnector and has identified some issues and concerns which should be addressed in the forthcoming Transport Assessment. AECOM's recommendations regarding these concerns are listed in the Executive Summary. AECOM have not taken a view at this stage as to which, if any, of these recommendations are regarded as 'Critical to the acceptability of the proposed development' since we consider that it will be desirable for the developer's consultant to address them all, and there will be the opportunity to do so as part of the work that will need to be done in the run up to the production of a Transport Assessment.

4.2. **AECOM therefore advise Highways England to continue to work with WSP, Hampshire County Council, Portsmouth City Council and other stakeholders to resolve the issues identified, with a view to reaching an agreed position in advance of the forthcoming DCO Hearing.**

Appendix 2 – AECOM TN02

AECOM

Project:	Highways England Spatial Planning Arrangement 2016-2020	Job No:	60600479/ DF006.001
Subject:	Aquind Interconnector – Initial Review of Documentation		
Prepared by:	Senthi Sivanathan	Date:	15th January 2020
Checked by:	Andrew Cuthbert	Date:	17th January 2020
Verified by:	Kelly Davis	Date:	20th January 2020
Approved by:	Andrew Cuthbert	Date:	22nd January 2020

Executive Summary

Following an initial review of the Environmental Statement documentation submitted in support of the proposed Aquind Interconnector on-shore works, AECOM recommend that the following information and analysis should be provided in order for Highways England to make an informed response to the proposals.

1. The use of the access from the A27/ A2030 roundabout to the Farlington Marshes car park for construction traffic should be explicitly excluded (para 2.4).
2. Explicit reference should be made to Circular 02/2013 so that Highways England can be assured that its requirements will be met (para 2.6).
3. The consultation material referred to at ES T&T Chapter 22.3.2 appears not to be contained in Appendix 22.2. and its location should be clarified (para 2.7).
4. In respect of the proposed use of the existing access from the A2030 to the Farlington Playing Fields, the following considerations should be addressed (para 2.11):
   - The adequacy of the current layout of this junction or whether any modifications are required to accommodate the vehicles brining the HDD drilling equipment and taking away spoil – this should be confirmed through the provision of HGV swept path plots;
   - The capacity of the right turn into the site and confirmation using a PICADY model that there is minimal risk of a queue of traffic tailing back out on to the northbound carriageway of Eastern Road;
   - The acceptability of the current in/out arrangements in which vehicles leaving Farlington Playing Fields must return to Eastern Road via either the Holiday Inn access or the Petrol Filling Station Forecourt;
   - The impact of traffic generated by this site access on the A2030/ Walton Road traffic signals and the risk of a queue tailing back towards the A27;
   - The impact on the A27/ A2030 junction of U-turns generated by users of this site access wishing to return north towards Farlington.
5. Dependent upon the scale of the impact reported in the TA, the proposed restrictions on the movement of heavy goods vehicles (HGVs) during peak periods may need to be modified to be more robust. In any case, they should be formalised as protective provisions in the DCO (para 2.13).
6. The significance of the impact of the proposals on the A27/A2030 junction and at other A3(M) and A27 junctions within the study area should be documented. (para 2.14).
7. The potential cumulative impact of this project with the M27 J4 – J11 Smart Motorway Project should be considered and its omission from the document justified (para 2.17).

T +44 (0)1245 771200
www.aecom.com

Saxon House
27 Duke Street
Chelmsford, Essex
CM1 1HT

8. A local junction capacity model should be provided of the A27/ A2030 junction (para 2.22).
9. In respect of the following junctions, evidence should be provided as to why it was not necessary to include local junction capacity models of these junctions (para 2.22):
   - M27 Junction 12 grade separated junction;
   - M27 Junction 12 roundabout junction with A3 Southampton Road;
   - A3(M) Junction 4;
   - A3(M) Junction 5;
   - The dumb-bell junction linking A3(M) junction 5 with the A27 east.
10. Local junction capacity models of the following junctions should also be considered (or alternatively evidence provided as to why it was not necessary to include them) (para 2.23):
    - The A2030/ Walton Road traffic signal controlled junction;
    - The junction between the A2030 and the access road serving the Farlington Playing Fields/ Holiday Inn.
11. The intended duration of individual location-specific elements of the work (for example the work at HDD-3, where the cable run crosses under the A27) should be explicitly stated (Table 1 item 6).

AECOM advise Highways England to continue to work with WSP, Hampshire County Council, Portsmouth City Council and other stakeholders to resolve the issues identified, with a view to reaching an agreed position in advance of the forthcoming DCO Hearing.

This should include further, more detailed, scrutiny of technical material identified in this TN which relates to specific areas of work which are likely to be of particular interest to Highways England.

1. Introduction

1.1. On behalf of Highways England, this Technical Note (TN) documents AECOM's initial review of the 'Traffic & Transport' chapter of the Environmental Statement (ES) for the proposed Aquind Interconnector. These documents have been accessed from the Planning Inspectorate (PINS) website as part of the documentation accompanying an application for a Development Consent Order (DCO) with PINS Reference: EN020022.

1.2. The Aquind Interconnector is a proposed cross-channel electricity cable, which will make landfall at Southsea (Portsmouth) and access the National Grid at a converter station at Lovedean, to the north of Denmead. The cable will cross the A27 Trunk Road to the east of its junction with the A2030 Eastern Road.

1.3. AECOM understand that the engineering aspects of providing a cable crossing at this point are to be dealt with by Highways England's maintaining agent and that AECOM's input into the process will relate primarily to the traffic capacity and road safety implications of the wider project on the Strategic Road Network (SRN).

1.4. AECOM previously reviewed three documents provided in advance of the DCO application being made. These were:

- Preliminary Environmental Information Report (PEIR), dated February 2019;
- The SRTM Data Analysis Report (SRTM DAR), dated September 2019: This provides a summary of the output from a run of the Solent Area Sub-Regional Transport Model (the SRTM) and provides details of the potential impact of the proposals at a number of locations on and close to the SRN within the South Hampshire area.
- The SRTM DAR contained a copy of the draft Transport Assessment Scoping Note (TASN), dated June 2019.

1.5. AECOM's previous review is documented in TN01, dated 14th October 2019, which made a number of recommendations. As well as reporting on a review of the Traffic & Transport chapter of the ES, this TN02 will identify which of AECOM's previous recommendations have been addressed and those that still need to be followed up. This analysis is presented in Table 1 contained within Section 3 of this TN.

1.6. The documents reviewed and commented on in this TN are as follows:

- Environmental Statement (ES) Chapter 22 Transport & Traffic Chapter (ES T&T Chapter);
- ES Appendix 22.1 - Transport Assessment (TA);
- ES Appendix 22.1A – Framework Traffic Management Strategy (FTMS);
- ES Appendix 22.2 - Framework Construction Traffic Management Plan (FCTMP).

1.7. The purpose of this TN02 is to report on an initial overview of the documentation provided, identify the areas likely to be of interest to Highways England and, in particular, if there is any information not currently included in the submission, which AECOM consider necessary to allow Highways England to take an informed view on these proposals.

1.8. The SRN in this vicinity comprises the following:

- The M27 Motorway;
- The A27 Trunk Road; and
- The A3(M) north of its junction with the A27.

1.9. AECOM assume that the whole of the following form part of the Local Road Network (LRN), managed by either Hampshire County Council or Portsmouth City Council:

- The M275 Motorway; and

- The A3 throughout the study area.

1.10. As part of our initial review of the documents, AECOM identified the following locations that might be of interest and could possibly be of concern to Highways England:

- A3(M) Junctions 2, 3, 4 and 5;
- The dumb-bell junction linking A3(M) J5 with the A27 east towards Havant;
- The A3/ Dell Piece (west)/ Catherington Lane junction in Horndean (controlling access to the LRN from A3(M) J2);
- The Hulbert Road/ Frendstaple Road/ Tempest Avenue junction in Waterlooville (controlling access to the LRN from A3(M) J3);
- The B2177 Portsdown Hill Road/Bedhampton Road/ Maylands Road/ Bedhampton Hill roundabout at Bedhampton (controlling access to the LRN from A3(M) J5);
- The A27/ A2030 Eastern Road grade-separated junction;
- The A3/ A27 Portsbridge grade-separated roundabout;
- M27 Junction 12; and
- A works site access located off the A2030 immediately to the north of its junction with the A27.

1.11. With the exception of the A27/ A2030 junction (which AECOM has previously recommended should be included), these locations were illustrated on the figure at Appendix B of the SRTM DAR, a copy of which is reproduced at Figure 1 on the following page.

1.12. The extent to which the ES and TA quantify the impact of the proposals at these locations is considered further in this TN02. The recommendations in this TN are identified by the use of **<u>bold underlined text</u>**.

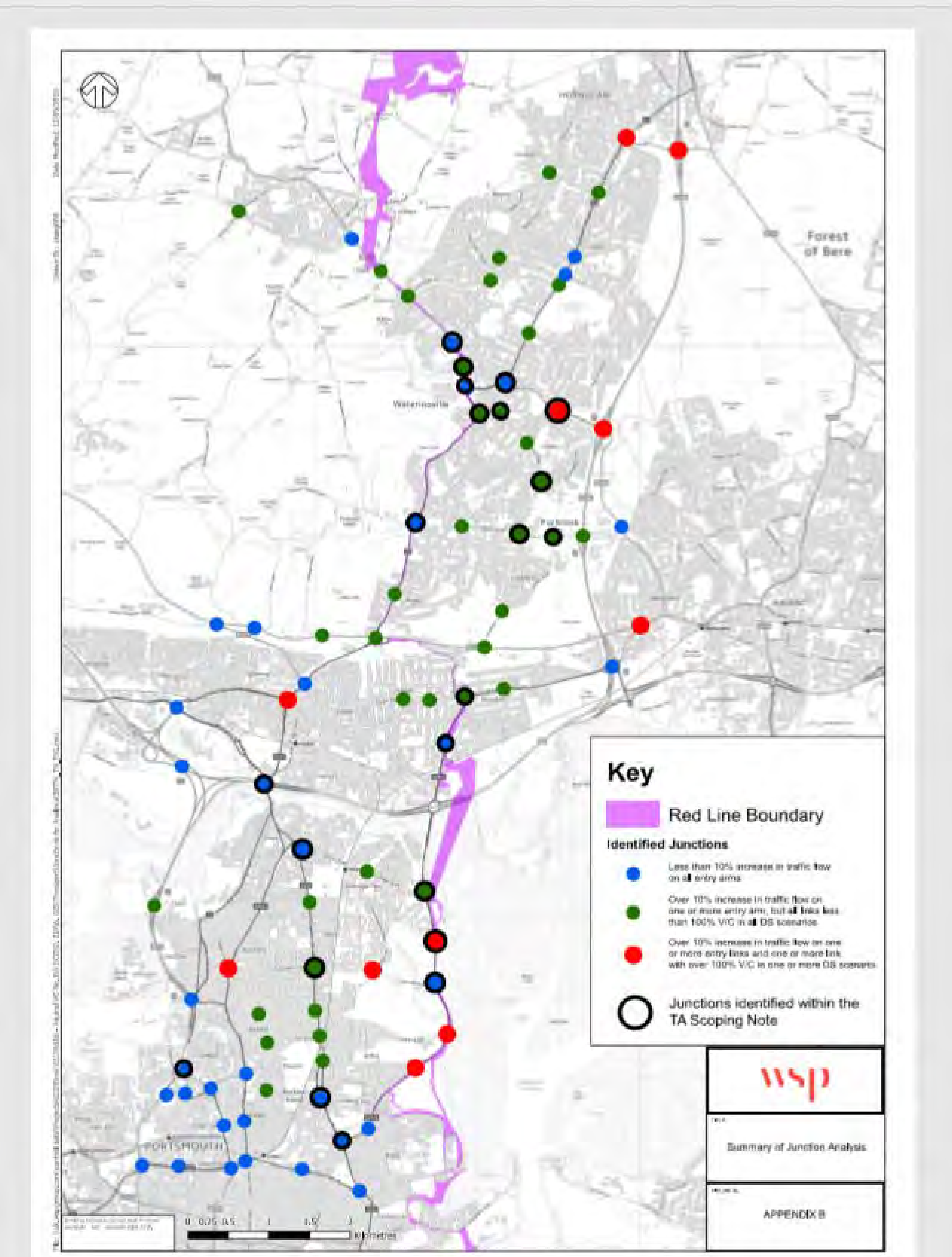


Figure 1: Junctions in the Study Area

(Source: SRTM DAR Appendix B)

2. Initial Review of Documents

The Proposed Works

2.1. Section 22.1 of the ES T&T Chapter provides a description of the scheme. It is evident that the key locations of interest for Highways England will be A3(M) Junction 2, which provides the primary access to the converter station at Lovedean; and the location at which the cables will cross the A27 just to the east of its junction with the A2030.

2.2. The converter station at Lovedean is the largest single source/ attractor of construction traffic generated by the scheme and ES T&T Chapter para 22.4.6.9 and TA para 1.8.3.7 both state that the only permitted route to/ from the converter station is accessed from the wider network via A3(M) Junction 2. The impact of construction traffic is implicit in the junction capacity modelling undertaken and this will be reviewed by AECOM in due course as part of our review of the junction capacity modelling.

2.3. Para 22.1.2.25 of the ES T&T Chapter states that: '*Horizontal Directional Drilling ('HDD') will be used to cross under the A27*'. Plate 22.10 of the ES T&T Chapter illustrates in general terms the proposal to gain access for the construction of the HDD section through the Farlington Playing Fields and para 1.3.5.39 confirms that the existing access road serving the playing fields will be used to gain access to the work site. Para 5.3.8.1 of the FCTMP also makes this point.

2.4. There is no reference to access being gained from the south side of the A27/ A2030 junction, through the Farlington Marshes car park access. For clarity, **AECOM recommend that the use of this access should be explicitly excluded**.

2.5. The implication of TA para 1.3.10.6 is that the whole section from Farlington Playing Fields (to the north of the A27) through to Kendalls Wharf (some 1.2km to the south) will be constructed as a single HDD section, whose site access will be through Farlington Playing Fields. In traffic impact terms, this will be preferable to a direct access to the work site from the Trunk Road or from the A2030. However, it does mean that the A2030/ Farlington Playing Fields access (and hence the A27/ A2030 junction) may be more intensively used over a longer period than would otherwise be the case.

Policy

2.6. Section 22.2.3 of the ES T&T Chapter contains a list of National Policies that apply to the project. This includes reference to the National Planning Policy Framework (NPPF), but it does not make reference to DfT Circular 02/2013 as well as Highway's England's 'The Strategic Road Network: Planning for the Future (a guide to working with Highway's England on planning matters)'. **AECOM recommend that explicit reference should be made to DfT Circular 02/2013 and Highways England's 'Planning for the future' document in the document so that Highways England can be assured that its requirements will be met.**

Consultation

2.7. Section 22.3.2.1 of the ES T&T Chapter refers to consultations that have taken place. Consultation with Highways England took place on:

- 22nd May 2018 – a meeting to discuss the project in general;
- 31st May 2019 – a meeting to provide a general project update and discuss the scope of the Transport Assessment.

This section of the ES T&T Chapter states that Appendix 22.2 contains a summary of consultation undertaken and outcome of discussions. **AECOM were unable to find this material in Appendix 22.2 and recommend that its location should be clarified**.

Abnormal Loads

2.8. Para 22.4.5.36 of the ES T&T Chapter discusses the issue of abnormal loads and para 22.6.5.20 discusses the implications of routing abnormal loads through A3(M) Junction 2, which AECOM will comment on in due course.

Collision Data

2.9. TA para 1.7.3.1 and Plate 29 present a summary of collision data covering A3(M) Junction 2 and 1.7.3.15 & Plate 32 covers the A27/ A2030 junction. The collision data itself is contained in TA Appendix E. The TA states that, in the five year period from January 2014 to December 2018 inclusive, there were 40 slight and 7 serious collisions in the area covered by Plate 29; and 32 slight and 11 serious collisions in Zone 8, which includes the A27/ A2030 junction. AECOM will review the collision analysis in due course.

Site Access Arrangements

2.10. The construction work sites are all accessed off the Local Road Network and no direct accesses are proposed on the SRN.

2.11. However, Highways England will require assurance that the access to the Farlington Playing Fields work site is adequate to accommodate the types and numbers of vehicles anticipated to use it, since it is an existing minor access point of limited geometry, served by a minor arm off the A2030 some 190m north of its junction with the A27. Any shortcomings in the layout or operation of this access have the potential to affect the operation of the SRN. **AECOM recommend that the following considerations should be addressed in respect of this junction:**

- **the adequacy of the current layout of this junction or whether any modifications are required to accommodate the vehicles brining the HDD drilling equipment and taking away spoil – this should be confirmed through the provision of HGV swept path plots;**
- **the capacity of the right turn into the site and confirmation using a PICADY model that there is minimal risk of a queue of traffic tailing back out on to the northbound carriageway of Eastern Road;**
- **the acceptability of the current in/out arrangements in which vehicles leaving Farlington Playing Fields must return to Eastern Road via either the Holiday Inn access or the Petrol Filling Station Forecourt;**
- **the impact of traffic generated by this site access on the A2030/ Walton Road traffic signals and the risk of a queue tailing back towards the A27;**
- **the impact on the A27/ A2030 junction of U-turns generated by users of this site access wishing to return north towards Farlington.**

The Management of Construction Traffic

2.12. Chapter 1.8 of the TA contains a summary of the FCTMP, the full text of which is contained at Appendix 22.2 of the ES (Appendix F of the TA). AECOM have not, at this stage, reviewed the full text of the FCTMP and the comments which follow are based on the summary at chapter 1.8 of the TA. A more detailed review of the FCTMP and the FTMS will be undertaken by AECOM in due course.

2.13. Para 1.8.3.3 and Table 47 of the TA set out the proposed working hours of the construction sites and para 1.8.3.4 sets out hours of work restrictions on HGVs delivering to the sites. In general, HGVs carrying construction materials will either arrive at 07:00 or between 09:00 and 17:00 and will therefore be timed to avoid the conventional peak hours. However, the TA acknowledges that some equipment/ material may be transported away from the sites at 17:00. For the HDD sites (such as that immediately to the north of the A27/ A2030 junction) the proposal is to avoid moving HGVs between 08:00 – 09:00 and 17:00 – 1800 (TA para 1.8.3.4). **Dependent upon the scale of**

<u>the impact reported in the TA, these restrictions may need to be modified to be more robust. In any case, AECOM recommend that they should be formalised as protective provisions in the DCO.</u>

2.14. ES T&T Chapter Section 22.4.7.3 and TA paras 1.8.3.6 – 1.8.3.27 contain details of the routes proposed to be used by construction traffic associated with the scheme. The following SRN junctions are listed as the primary points of access between the work sites serving the ten sections of onshore cable corridor route and the wider network:

Route section	SRN junction(s) used
Section 1 (including the converter station at Lovedean)	A3(M) Junction 2
Sections 2 & 3	A3(M) Junction 3
Section 4	A3(M) Junctions 3 and 5
Section 5 (Farlington)	A3(M) Junction 5; A27/ A2030 junction
Sections 6 – 10 inclusive	A27/ A2030 junction

It is evident from the above that the impact of construction traffic will be concentrated at A3(M) Junction 2 and the A27/ A2030 junction at Farlington.

Impacts

2.15. Section 22.6.5 of the ES T&T Chapter summarises in general terms the anticipated impacts of the proposals on the highway network. The impacts at A3(M) Junction 2 and at the A27/ A3 Portsbridge Roundabout are rated 'Significant' whilst at A3(M) Junction 3 they are rated 'Negligible'. No impact rating is stated at the A27/ A2030 junction or at the other A3(M) and A27 junctions located within the study area. **<u>AECOM recommend that the significance of the impact of the proposals on the A27/A2030 junction and at other A3(M) and A27 junctions within the study area should be documented</u>**.

2.16. Section 1.10 of the TA sets out the methodology for assessing the impact of the scheme on the highway network. This is based on a number of 'bespoke' runs of the Solent Sub-Regional Transport Model (the SRTM) for a number of representative construction phases and traffic management scenarios. These were assessed in the year 2026, which is the closest available model run year in the SRTM to the anticipated construction period. Appendix B of the TA contains details of the SRTM run. AECOM will review the material available in due course.

2.17. It is evident from Appendix B that a number of committed developments and infrastructure schemes have been included in the SRTM model run. However, there appears to be no reference in either the ES T&T Chapter or the TA to the potential cumulative impact of the Aquind Interconnector with the M27 J4 – J11 Smart Motorway scheme, should their construction periods overlap. **<u>AECOM recommend that this omission should be justified.</u>**

2.18. Section 1.11 of the TA contains details of the strategic impact of the proposals. This is expressed as a series of journey time changes extracted from the SRTM for 8 different route corridors. These are summarised in Table 63 of the TA. Route corridors 4 (A3(M) Junction 2 – M27 Junction 12) and 8 (A2030 between Havant and Portsmouth) are likely to be of interest to Highways England.

2.19. For route corridor 4, the model shows minimal change in journey times between the 'Do Minimum' and 'Do Something' scenarios whereas Route Corridor 8 records journey time increases of up to 60 seconds (around 4%).

2.20. Section 1.12 of the TA records the results of local junction capacity models for key junctions. The following relate to junctions previously identified as being of interest to Highways England:

- A3(M) junction 2 (Tables 105 – 107);
- A3 London Road/ B2149 Dell Piece West junction (Tables 108 – 110);
- A3(M) Junction 3 (Tables 111 – 114);
- Hulbert Road/ Frendstaple Road junction (Tables 117 – 119);
- B2177 Portsdown Hill/ Bedhampton Hill junction (Tables 132 – 134);
- A3 Southampton Road/ Spur Road roundabout (Tables 135 – 137);
- M27/ A3 Portsbridge roundabout (Tables 138 – 140).

2.21. AECOM will comment on the significance of these results in due course.

2.22. Local junction capacity models for the following junctions, which were identified as potentially of interest in AECOM TN01, are not included in the TA:

- A27/ A2030 Farlington junction;
- M27 Junction 12 grade separated junction;
- M27 Junction 12 roundabout junction with A3 Southampton Road;
- A3(M) Junction 4;
- A3(M) Junction 5; and
- The dumb-bell junction linking A3(M) junction 5 with the A27 east.

2.23. No rationale appears to have been given in the TA for the exclusion of these junctions from the junction capacity modelling study. **In respect of the A27/ A2030 junction, AECOM recommend that a local junction capacity model should be provided**. **In respect of the other junctions on the list in para 2.21, AECOM recommend that evidence is provided as to why it was not necessary to include them**.

2.24. In addition, in view of the presence of a construction site access serving the proposed HDD crossing under the A27, **AECOM recommend that local junction capacity models of the following junctions should also be considered (or alternatively evidence provided as to why it was not necessary to include them):**

- **The A2030/ Walton Road traffic signal-controlled junction; and**
- **The junction between the A2030 and the access road serving the Farlington Playing Fields/ Holiday Inn**.

3. Summary of Issues raised in Technical Note 01

3.1. As detailed earlier in this report, AECOM's previous review is documented in TN01, dated 14th October 2019, which made a number of recommendations. Table 1 below identifies which of AECOM's previous recommendations have been addressed and those that still need to be followed up.

Table 1 (Summary of Issues raised in Technical Note 01)

TN01 Recommendation		Response	Comments
1	The A27/ A2030 grade separated junction should be included in the study area and the impact of the scheme at this junction should be examined. Alternatively, justification should be provided for its exclusion (para 2.13)	No junction capacity model, nor justification for its exclusion from the study area has been provided. Although ES T&T Chapter para 22.1.2.25 states that the A2030 Eastern Road between the access junction to Farlington Playing Fields and the A27 Havant Bypass will be impacted only by construction traffic associated with the cable installation process and perhaps this is meant to explain its absence from the study.	The statement at ES 22.1.2.25 is not fully accurate – access to the HDD compound at Farlington Playing fields will also use this section and TA para 1.8.3.20 -1.8.3.35 makes it clear that a substantial part of the works in sections 5 – 10 will have their primary access via the A27/ A2030 junction. In AECOM's view, the capacity of this key junction should have been assessed. **The recommendation for a capacity assessment of this junction is repeated in this TN02 at para 2.22.**
2	The existence or otherwise of a construction site access on the east side of the A2030, to the north of its junction with the A27 should be confirmed (para 1.10). If a site access is proposed here, further details should be provided as follows: • Its proposed layout, including HGV swept path analysis; • Its capacity tested using a PICADY model; • Confirmation that the risk of a queue back from this junction to the A27/ A2030 grade separated junction is minimal; and • If this is not the case, details of traffic management measures designed to minimise such queueing.	ES T&T Chapter para 22.1.2.25 and TA para 1.3.10.6 both state that HDD will be used to cross under the A27 and Langstone Harbour. TA para 1.3.5.39 states that access to the HDD site will be taken from the A2030 via the existing Farlington Playing fields access road and car park north of the Holiday Inn. No details have been provided with regard to the adequacy of the current layout of this junction or whether any modifications are required to accommodate the construction traffic. (Other site access locations have been identified in the Framework Construction Traffic Management Plan, the site access at Lovedean (Converter Station) is the only drawing provided).	Whilst this is an existing access and therefore some of the issues raised in AECOM TN01 may not apply, the following considerations would: • the adequacy of the current layout of this junction or whether any modifications are required to accommodate the vehicles brining the HDD drilling equipment and taking away spoil; • the capacity of the right turn into the site and confirmation using a PICADY model that there is minimal risk of a queue of traffic tailing back out on to the northbound carriageway of Eastern Road; • the acceptability of the current in/out arrangements in which vehicles leaving Farlington playing fields must return to Eastern Road via either the Holiday Inn access or the Petrol Filling Station Forecourt; • the impact of traffic generated by this site access on the A2030/ Walton Road traffic signals and the risk of a queue tailing back towards the A27; • the impact on the A27/ A2030 junction of U-turns generated by users of this site access wishing to return north towards Farlington. In AECOM's view, these aspects should have been addressed. **Para 2.11 of this TN02 recommends further assessment of this site access.**

TN01 Recommendation		Response	Comments
3	Details of the performance of the following junctions in each assessment scenario, extracted from the SRTM runs already undertaken (para 2.13): • A3/ A27 Portsbridge roundabout; • M27 Junction 12 grade separated junction; • M27 Junction 12 roundabout junction with A3 Southampton Road/ Western Road; • A3(M) Junction 4; • A3(M) Junction 5; and • The dumb-bell junction linking A3(M) J5 with the A27 east towards Havant.	The TA contains details of an ARCADY model run of the A3/ A27 Portsbridge roundabout. This reveals that the RFC of the M27 off-slip road roundabout entry is predicted to increase from 0.92 to 0.98 (queue from 9 to 16 PCUs) in 2026 whilst the works are under way. AECOM will review this model in due course and comment in detail on the model and the results presented. No information has been provided with regard to performance of the other stated junctions. (Journey time assessments have been provided for the A27 and A3(M) as well as a capacity assessment).	Justification for its absence has not been provided although the TA states that only junctions that have experienced an increase in 10% or more on one approach have been included. AECOM would welcome confirmation, possibly using more detailed output from the SRTM, that the other junctions on this list did not warrant junction capacity models. **Para 2.22 of this TN02 recommends this.**
4	Further details of the performance of the following junctions, for each scenario, extracted from the SRTM runs already undertaken, to include arm-by-arm analysis (including circulatory stop lines on signal-controlled roundabouts) of capacity and queueing (para 2.12) • A3(M) Junction 2; • A3/ Dell Piece (west)/ Catherington Lane junction; • A3(M) Junction 3; • Hulbert Road/ Frendstaple Road/ Tempest Avenue junction; • A3 Southampton Road/ London Road/ Spur Road junction; and • B2177 Portsdown Hill/ Bedhampton Hill junction.	TA section 1.11 contains details of ARCADY, PICADY and LinSig models (as appropriate) assessing the impact of the proposals on each of these junctions.	AECOM to review these models in due course and comment in detail on the models and the results presented.

TN01 Recommendation		Response	Comments
5	Where these SRTM results disclose a potentially severe impact, detailed junction capacity models using industry-standard software such as ARCADY or LinSig should be provided so as to examine in more detail the performance of the junction under the traffic flows predicted (para 2.14).	Junction capacity assessments have been taken on 31 existing junctions as defined in Section 10 of the TA. TA section 1.11 contains details of ARCADY, PICADY and LinSig models (as appropriate) assessing the impact of the proposals on each of these junctions.	AECOM to review these models in due course and comment in detail on the models and the results presented.
6	Clarification should be provided on the durations over which the impacts reported are likely to arise (para 2.6).	The programme of works is defined in TA para 1.1.5.1 & Table 1 as lasting from Q3 2021 to Q4 2024. The total duration of the works being 27 months. The peak construction year is defined as 2022. The construction stage of the proposed development has been assessed using a 2026 future scenario as this was the most appropriate model scenario available within the SRTM (as stated in the Traffic and Transport Chapter of the ES). The proposed hours of working of the construction sites and proposed restrictions on peak hour heavy goods vehicle movements are set out in TA section 1.8.	Appendix F of the TA contains the construction programme. However, the intended duration of individual location-specific elements of the work (for example the work at HDD-3, where the cable run crosses under the A27) is not explicitly stated. **AECOM recommend that this information is provided.**

4. Conclusion

4.1. This TN02 documents an initial review of the Traffic & Transport chapter within the Environmental Statement (ES) for the proposed Aquind Interconnector and has commented on the potential impacts on the Strategic Road Network during its construction. The ES supports a Development Consent Order (DCO) application for the proposed cross-channel electricity cable.

4.2. This TN02 has identified the information within the ES that is likely to be of interest to Highways England and has highlighted a number of omissions which AECOM consider necessary to allow Highways England to take an informed view on these proposals.

4.3. This TN02 also provides a summary of the recommendations made in our TN01 which reported on a review of previous documents issued in support of the DCO application and highlights any outstanding points.

4.4. **AECOM advise Highways England to continue to work with WSP, Hampshire County Council, Portsmouth City Council and other stakeholders to resolve the issues identified, with a view to reaching an agreed position in advance of the forthcoming DCO Hearing.**

4.5. **This should include further, more detailed, scrutiny of technical material identified in this TN which relates to specific areas of work which are likely to be of particular interest to Highways England.**

Appendix 3 – AECOM TN03

Technical Note 03

Project:	**Highways England Spatial Planning Arrangement 2016-2020**	Job No:	**60600479 DF006.002**
Subject:	**Aquind Interconnector-Review WSP TN HE01 & HE02**		
Prepared by:	**Senthi Sivanathan**	Date:	**10th August 2020**
Checked by:	**Andrew Cuthbert**	Date:	**18th August 2020**
Verified by:	**Liz Judson**	Date:	**19th August 2020**
Approved by:	**Andrew Cuthbert**	Date:	**21st August 2020**

Executive Summary

This Technical Note (TN03) summarises a review on behalf of Highways England of WSP's 'Technical Note HE01-Response to Highways England Note TN02' and 'Technical Note HE02-Response to Highways England Comments' in support of the proposed Aquind Interconnector on-shore works. The review considers the documents submitted by WSP in response to AECOM's TN02 dated 22nd January 2020 and AECOM's email to WSP dated 4th May 2020. Following the review of the documents submitted by WSP, AECOM make the following recommendations.

Recommendations regarded as critical to the agreement in principle of the planning application:

1. With regard to A3(M) Junctions 2 and 3, lane simulation should be used within ARCADY as a sensitivity test (paras 3.5 and 3.11) and these sensitivity tests should be undertaken before the results of the modelling are accepted (para 3.7 and 3.14).

2. Further work should be carried out at A3(M) Junction 2 and Junction 3 to quantify the impact of Aquind Interconnector for the following scenarios (para 3.19):

    - Without the committed development referred to at para 3.16 and without its mitigation scheme;

    - With the committed development and with its mitigation scheme.

Recommendations regarded as important but not critical to the agreement in principle of the planning application:

3. For both access and egress at the Farlington playing fields with regard to over sized vehicles, traffic management should be used (para 2.9).

4. Access by a 20t tipper/11.7m rigid vehicle at the Farlington playing fields should also take place under traffic management control (para 2.10).

5. Proposed restrictions on the movement of HGV's during peak periods will still need to be more robust and should be formalised as protective provisions in the DCO (para 2.16).

6. The promoter of the Aquind Interconnector should work collaboratively with Highways England to co-ordinate matters such as temporary traffic signage in the event that the construction phases of the M27 J4 – J11 Smart Motorway Project and Aquind Interconnector scheme overlap (para 2.22).

7. Once a construction contractor is appointed, the exact details of the construction phasing and duration of works should be provided (para 2.35).

8. With regard to A3(M) Junction 2, the flow diagrams or the models should be corrected to ensure that these are consistent, and that clarification is provided. Furthermore, there appears to be no flows from A3(M) south to Dell Piece East and confirmation should be provided that this is correct (para 3.2).

9. With regard to A3(M) Junction 2, the AM peak ARCADY analysis for this junction should be provided (para 3.3).

10. With regard to A3(M) Junction 3, there appears to be no flows from A3(M) south to Hulbert Road East, and confirmation should be provided that this is correct (para 3.9).

AECOM advise Highways England to continue to work with WSP, Hampshire County Council, Portsmouth City Council and other stakeholders to resolve the issues identified, with a view to reaching an agreed position in advance of the forthcoming DCO Hearing.

This should include further, more detailed, scrutiny of technical material identified in this TN which relates to specific areas of work which are likely to be of particular interest to Highways England.

1. Introduction

1.1. AECOM, on behalf of Highways England, have undertaken a review of WSP's 'Technical Note HE01-Response to Highways England Note TN02' and 'Technical Note HE02-Response to Highways England Comments' in support of the proposed Aquind Interconnector on-shore works. The review considers the documents submitted by WSP in response to AECOM's TN02 dated 22nd January 2020 and AECOM's email sent to WSP, 4th May 2020.

1.2. The Aquind Interconnector is a proposed cross-channel electricity cable, which will make landfall at Southsea (Portsmouth) and access the National Grid at a converter station at Lovedean, to the north of Denmead. The cable will cross the A27 Trunk Road to the east of its junction with the A2030 Eastern Road.

1.3. AECOM understand that the engineering aspects of providing a cable crossing at this point are to be dealt with by Highways England's maintaining agent and that AECOM's input into the process relates primarily to the traffic capacity and road safety implications of the wider project on the Strategic Road Network (SRN).

1.4. AECOM previously reviewed seven documents provided in advance of the DCO application (ref EN020022) being made. These were:

- Preliminary Environmental Information Report (PEIR), dated February 2019;
- The SRTM Data Analysis Report (SRTM DAR), dated September 2019: This provides a summary of the output from a run of the Solent Area Sub-Regional Transport Model (the SRTM) and provides details of the potential impact of the proposals at a number of locations on and close to the SRN within the South Hampshire area.
- The SRTM DAR contained a copy of the draft Transport Assessment Scoping Note (TASN), dated June 2019.
- Environmental Statement (ES) Chapter 22 Transport & Traffic Chapter (ES T&T Chapter) dated 14 November 2019;
- ES Appendix 22.1 - Transport Assessment (TA) dated 14 November 2019;
- ES Appendix 22.1A – Framework Traffic Management Strategy (FTMS) dated 14 November 2019; and
- ES Appendix 22.2 - Framework Construction Traffic Management Plan (FCTMP) dated 14 November 2019.

1.5. AECOM's previous review is documented in TN02, dated 22nd January 2020, which made a number of recommendations. After an initial review of WSP's HE01, AECOM sought further detail and clarification on a number of issues via an email sent to WSP on the 4th May 2020. WSP have responded to the contents of this email in response HE02. The purpose of this TN is to consider whether HE01 and HE02 address AECOM's previous concerns appropriately and therefore determine whether the potential impact of the proposal on the strategic road network (SRN) has been reasonably assessed. This TN will consider whether the impact of the development on the SRN is thought to be material and, following the analysis of the impact, whether measures are required to mitigate the impact of the development on the SRN.

1.6. For ease of reference, AECOM's main comments and recommendations are presented in bold and underlined text throughout the note. Recommendations regarded as critical to the acceptability of this planning application are coloured **red.** Recommendations that are of concern but not critical to agreement of this planning application, which AECOM anticipate can be resolved at a subsequent stage of the project, are highlighted in **amber.** Recommendations that are considered to be resolved are coloured **green.**

2. Recommendations previously identified in AECOM's TN02

AECOM Recommendation 1.

The use of the access from the A27/ A2030 roundabout to the Farlington Marshes car park for construction traffic should be explicitly excluded.

WSP Response:

2.1. As further detailed in AECOM's TN02, para 22.1.2.25 of the ES T&T Chapter states that: 'Horizontal Directional Drilling ('HDD') will be used to cross under the A27'. Furthermore para 22.10 of the ES T&T Chapter illustrates in general terms the proposal is to gain access for the construction of the HDD section through the Farlington Playing Fields and para 1.3.5.39 confirms that the existing access road serving the playing fields will be used to gain access to the work site.

2.2. AECOM previously suggested that there was no reference to access being gained from the south side of the A27/ A2030 junction, through the Farlington Marshes car park access. For clarity, AECOM recommended that the use of this access should be explicitly excluded. WSP's HE01 confirms that that access to work site HDD3 will be taken from the A2030 Eastern Road/ Farlington Playing Fields site access junction and not from the Farlington Marshes Car Park. Furthermore, it is to be noted that work site HDD4 is also to be accessed in part through Farlington Playing Fields. **Recommendation 1 is therefore considered to be resolved.**

AECOM Recommendation 2.

Explicit reference should be made to Circular 02/2013 so that Highways England can be assured that its requirements will be met.

WSP Response:

2.3. As further detailed in AECOM's TN02, Section 22.2.3 of the ES T&T Chapter contained a list of National Policies that applied to the project. This included reference to the National Planning Policy Framework (NPPF), but it did not refer to DfT Circular 02/2013 as well as Highway's England's 'The Strategic Road Network: Planning for the Future (a guide to working with Highway's England on planning matters)'. AECOM recommend in AECOM's TN02 that reference should be made to DfT Circular 02/2013 and Highways England's 'Planning for the future' document in the document so that Highways England can be assured that its requirements will be met.

2.4. In WSP's HE01, reference has been made to DfT Circular 02/2013 as well as Highway's England's 'The Strategic Road Network: Planning for the Future (a guide to working with Highway's England on planning matters)'. AECOM consider that the documents outlined in HE01 are relevant policy documents for review therefore, **Recommendation 2 is considered to be resolved.**

AECOM Recommendation 3.

The consultation material referred to at ES T&T Chapter 22.3.2 appears not to be contained in Appendix 22.2. and its location should be clarified.

WSP Response:

2.5. Section 22.3.2.1 of the ES T&T Chapter refers to consultations that have taken place. Consultation with Highways England took place on:

- 22nd May 2018 – a meeting to discuss the project in general;
- 31st May 2019 – a meeting to provide a general project update and discuss the scope of the Transport Assessment.

2.6. Section 22.3.2.1 of the ES T&T Chapter states that Appendix 22.2 contains a summary of consultation undertaken and the outcome of discussions however AECOM were unable to find this material in Appendix 22.2 and recommended that its location should be clarified.

2.7. WSP's HE01 states that the consultation material referred to at ES T&T Chapter 22.3.2 is provided within Appendix 22.3 Consultation Responses (Environmental Statement Document APP451). Furthermore, a copy of APP-451 has been provided by WSP in Appendix 1 of HE01. **Recommendation 3 is therefore considered to be resolved.**

AECOM Recommendation 4.

In respect of the proposed use of the existing access from the A2030 to the Farlington Playing Fields, the following considerations should be addressed:

- The adequacy of the current layout of this junction or whether any modifications are required to accommodate the vehicles bringing the HDD drilling equipment and taking away spoil – this should be confirmed through the provision of HGV swept path plots;
- The capacity of the right turn into the site and confirmation using a PICADY model that there is minimal risk of a queue of traffic tailing back out on to the northbound carriageway of Eastern Road;
- The acceptability of the current in/out arrangements in which vehicles leaving Farlington Playing Fields must return to Eastern Road via either the Holiday Inn access or the Petrol Filling Station Forecourt;
- The impact of traffic generated by this site access on the A2030/ Walton Road traffic signals and the risk of a queue tailing back towards the A27; and
- The impact on the A27/ A2030 junction of U-turns generated by users of this site access wishing to return north towards Farlington.

WSP Response:

2.8. The construction work sites are all accessed off the Local Road Network and no direct accesses are proposed on the SRN, however as further detailed in AECOM's TN02, Highways England required assurance that the access to the Farlington Playing Fields work site is adequate to accommodate the types and numbers of vehicles anticipated to use it.

2.9. In HE01, WSP provided a swept path plot for an over-sized HGV accessing and egressing Farlington Playing Fields. It is to be noted that these vehicles will access and egress using the same access point and will only access the site once or twice during the works period. **AECOM recommend that for both access and egress of these vehicles, and as suggested in HE01, traffic management is used which would provide a safe and controlled means of access.**

2.10. After an initial review of the swept paths contained in HE01 AECOM requested, in their email dated 4th May 2020, HGV swept path plots for the standard-sized HGVs that will need to access Farlington Playing Fields on a regular basis. WSP's HE02 provides HGV swept path plots to show that standard-sized HGVs can access and egress the playing fields. The swept path plots provided in Appendix 2 of HE02 show a 20t tipper vehicle entering the Farlington Playing Fields via the A2030 access north of the PFS and exiting via the loop road which serves the Holiday Inn to re-join the A2030 south of the PFS. In addition, WSP have subsequently provided swept paths for a 11.7m rigid vehicle accessing and egressing the playing fields These swept paths appear to be reasonable. The design vehicle appears able to enter and leave the site without over-running kerbs or adjoining traffic lanes. However, the vehicle does take up the whole width of the access road serving the playing fields themselves, and **AECOM therefore recommend that access by this size of vehicle should also take place under traffic management control.**

2.11. WSP state in HE01 that due to the limited number of right turners into the Farlington Playing Fields (numbers in the peak hour are anticipated to be of the order of 1-2 heavy goods vehicles per hour, with workforce trips occurring outside of the peak hours), the capacity of the right turn into Farlington Playing Fields car park and the signal-controlled junction with the A2030 Eastern Road / Walton Road will not be affected. Likewise, HE01 states that given the low level of forecast vehicle movements, it is not expected that there will be any queuing back to the signal-controlled roundabout with the A27 Havant Bypass / A2030 Eastern Road. AECOM accept this response.

2.12. AECOM had previously queried the impact on the A27/ A2030 junction of U-turns generated by users of this site access wishing to return north towards Farlington. WSP in HE01 state that it is not anticipated that any construction traffic will need to perform U-turns at this junction, since it will all arrive and leave to/ from the south. **Recommendation 4 can be considered to be resolved.**

AECOM Recommendation 5.

Dependent upon the scale of the impact reported in the TA, the proposed restrictions on the movement of heavy goods vehicles (HGVs) during peak periods may need to be modified to be more robust. In any case, they should be formalised as protective provisions in the DCO.

WSP Response:

2.13. As further detailed in AECOM's TN02, para 1.8.3.3 and Table 47 of the TA sets out the proposed working hours of the construction sites and para 1.8.3.4 sets out hours of work restrictions on HGVs delivering to the sites.

2.14. In general, it was stated that HGVs carrying construction materials will either arrive at 07:00 or between 09:00 and 17:00 and will therefore be timed to avoid the conventional peak hours. However, the TA acknowledged that some equipment/ material may be transported away from the sites at 17:00. For the HDD sites (such as that immediately to the north of the A27/ A2030 junction) the proposal was to avoid moving HGVs between 08:00 – 09:00 and 17:00 – 1800 (TA para 1.8.3.4). In AECOM's TN02, AECOM suggested that dependent upon the scale of the impact reported in the TA, these restrictions may need to be modified to be more robust and, in any case, it was recommended that they should be formalised as protective provisions in the DCO.

2.15. WSP's HE02 states that, since submission of the TA, the assumption applied to the movement of construction worker trips has changed. HE02 states that at submission the assumption was that all construction workers associated with the Onshore Cable Corridor would arrive at the Converter Station Area compound between 06:00-07:00 and depart between 18:00-19:00 to reflect the 07:00 to 17:00 working day at each Cable Route construction location and taking account of travel time between the Converter Station and construction location. However, HE02 now states that that the 07:00 to 17:00 working day is inclusive of arrival and departure times at the Converter Station Area compound. HE02 details the construction worker trips that are likely to occur between 17:00 and 18:00 in proximity to the Converter Station and A3(M) Junction 2.

2.16. Due to the potential impact at A3(M) Junction 2 and A3(M) Junction 3 detailed later in this report, **AECOM recommend that the proposed restrictions on the movement of HGV's during peak periods will still need to be more robust and should be formalised as protective provisions in the DCO.**

AECOM Recommendation 6.

The significance of the impact of the proposals on the A27/A2030 junction and at other A3(M) and A27 junctions within the study area should be documented.

WSP Response:

2.17. As further detailed in AECOM's TN02, section 22.6.5 of the ES T&T Chapter summarises in general terms the anticipated impacts of the proposals on the highway network. The impacts at A3(M) Junction 2 and at the A27/ A3 Portsbridge Roundabout are rated 'Significant' whilst at A3(M) Junction 3 they are rated 'Negligible'. No impact rating was stated at the A27/ A2030 junction or at the other A3(M) and A27 junctions located within the study area. AECOM previously recommend that the significance of the impact of the proposals on the A27/A2030 junction and at other A3(M) and A27 junctions within the study area should be documented.

2.18. As detailed earlier in this report, a justification for not providing a junction capacity models of the A2030/ Farlington Playing Fields access junction, the A27/A2030 roundabout and the A2030/ Walton Road junction has been provided by WSP (due to the low level of forecast vehicle movements). With regard to the impact of the proposals at other A3(M) and A27 junctions, this is detailed later on this report.

2.19. It is to be noted that WSP have provided information with regard to junction capacity modelling undertaken at A3(M) Junctions 2 and 3 and this is again detailed later in this report. **This issue can therefore be considered resolved, subject to the accuracy of the analyses provided.**

AECOM Recommendation 7.

The potential cumulative impact of this project with the M27 J4 – J11 Smart Motorway Project should be considered and its omission from the document justified.

WSP Response:

2.20. As further detailed in AECOM's TN02, a number of committed developments and infrastructure schemes have been included in the SRTM model run. However, AECOM stated that there appeared to be no reference in either the ES T&T Chapter or the TA to the potential cumulative impact of the Aquind Interconnector with the M27 J4 – J11 Smart Motorway scheme, should their construction periods overlap. AECOM recommended that this omission should be justified.

2.21. WSP's HE01 states that the installation of the Onshore Cable Corridor is unlikely to affect the smart motorway works. HE01 states that it is proposed that the Onshore Cable Corridor would pass under the SRN (via Horizontal Directional Drilling) at the section of the A27 Havant Bypass next to Farlington Playing Fields and the grade separated roundabout interchange with the A2030 Eastern Road which is approximately 10km east of Junction 11 and not within the scheme extents of the smart motorway works on the M27. Consequently, WSP state that the works would not impact on the smart motorway scheme and the effect of any temporary traffic redistribution would be limited and has been substantiated by WSP by the numbers highlighted in Table 1 of HE01.

2.22. WSP state that the majority of construction traffic associated with the Onshore Cable Corridor would only travel between the cable gangs and the site compound using the A3(M) and A27 Havant Bypass as required and that the M27 would not be affected other than in relation to occasional material deliveries. AECOM consider this to be reasonable however **recommend that the promoter of the Aquind Interconnector work collaboratively with Highways England to co-ordinate matters such as temporary traffic signage in the event that the construction phases of the two schemes overlap.**

AECOM Recommendation 8.

A local junction capacity model should be provided of the A27/ A2030 junction.

WSP Response:

2.23. AECOM previously stated that there was no rationale given in the TA for the exclusion of the A27/A20030 junction from the junction capacity modelling study. As stated earlier in this report, a justification has now been provided (due to the low level of forecast of vehicle movements at this junction). Indeed, Appendix 4 of HE02 indicates a net reduction in the use of this junction during the construction works, presumably due to drivers re-assigning away from the A2030 corridor to avoid the works. Therefore **Recommendation 8 is now considered resolved.**

AECOM Recommendation 9.

In respect of the following junctions, evidence should be provided as to why it was not necessary to include local junction capacity models of these junctions:

- M27 Junction 12 grade separated junction;
- M27 Junction 12 roundabout junction with A3 Southampton Road;
- A3(M) Junction 4;
- A3(M) Junction 5; and
- The dumb-bell junction linking A3(M) junction 5 with the A27 east.

WSP Response:

2.24. With regard to the junctions above, traffic flows were provided in Table 2 of HE01. Following a review of Table 2 AECOM sought further clarification on the units used in the traffic flows as they appeared to be too high to be peak hourly flows but too low to be AADTs (as suggested by Table 2). Furthermore, AECOM sought clarification with regard to the peak periods.

2.25. HE02 states that the traffic flows provided in Table 2 of HE01 refer to peak periods for the AM (07:00-10:00) and PM (16:00-19:00). The peak hourly traffic flows have been provided in the table presented in Appendix 4 of HE02, which presents a comparison of SRTM forecast traffic flows on the Strategic Road Network between the DM, DS1 and DS2 scenarios.

2.26. WSP state that the majority of slip roads and approaches connecting to the SRN, across the seven assessed junctions listed above are forecast to experience a reduction in traffic or an increase in traffic of less than 2%. HE02 state that such increases are not considered significant and therefore are not expected to impact on the operational capacities of these junctions.

2.27. Furthermore, WSP state as the works will be temporary in nature and that the assessed scenarios are an indication of a worst-case scenario (when the most disruptive traffic management is in place simultaneously) a robust assessment has been undertaken. WSP also state that the measures contained within the Framework Traffic Management Strategy (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2), will ensure that such a situation should not arise, meaning that the cumulative impact of redistributing traffic will be less than what has been forecast. WSP state that the overall the effect of traffic redistribution from the outputs of the SRTM forecasts does not appear to be concentrated on the SRN and appears to be fairly dispersed across the network.

2.28. It is to be noted that Highways England do not use thresholds to determine the need for a junction capacity assessment but instead assess the requirement on a case by case basis. WSP consider that the proposals are predicted to have a limited impact on traffic flows using the junctions highlighted above, both in absolute and percentage terms. The largest increase predicted is 121 vehicles per hour at M27 Junction 12 in the PM peak (an increase of 1.5%) and the largest single increase on a Trunk Road or Motorway slip road is 89 vehicles per hour (7.7%) on the east-to-south slip road from M27 to M275 at M27 J12, again in the PM peak.

2.29. Whilst increases of this magnitude might normally trigger a need for a junction capacity model, given the limited timescale over which they will apply, and the inherent uncertainty over which alternative routes drivers will actually take in response to traffic management works on the Local Road Network, **AECOM accept that no further work is required to quantify the impact of these traffic flow changes at this group of junctions. This issue is therefore resolved**.

AECOM Recommendation 10.

Local junction capacity models of the following junctions should also be considered (or alternatively evidence provided as to why it was not necessary to include them):

- The A2030/ Walton Road traffic signal-controlled junction; and
- The junction between the A2030 and the access road serving the Farlington Playing Fields/ Holiday Inn.

WSP Response:

2.30. AECOM in TN02 recommend that local junction capacity models of the above-named junctions should also be considered (or alternatively evidence provided as to why it was not necessary to include them).

2.31. WSP state in HE01 that as part of the analysis undertaken for the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1), none of the approaches at the junctions detailed above were forecast to experience an increase in traffic of 10% or more and neither of these junctions have a V/C of over 100% in one or both of the DS scenarios.

2.32. Furthermore, WSP state that the number of construction vehicles accessing Farlington Playing Fields is anticipated to be minimal (circa 1-2 per hour) and HGV construction traffic will occur outside of the peak periods. WSP also state that the flows along the A2030 Eastern Road to and from the roundabout with the A27 Havant Bypass are forecast to decrease in all scenarios.

2.33. AECOM are satisfied with this justification and therefore **Recommendation 10 is now considered resolved.**

AECOM Recommendation 11.

The intended duration of individual location-specific elements of the work (for example the work at HDD-3, where the cable run crosses under the A27) should be explicitly stated.

WSP Response:

2.34. As noted in AECOM's TN02, the intended duration of individual location-specific elements of the work (for example the work at HDD-3, where the cable run crosses under the A27) was not explicitly stated. WSP's HE01 states that the duration of the six HDD sites are detailed in Table 3.6 of the Description of the Proposed Development (APP-118: 6.1.3 Environmental Statement - Volume 1 Chapter 3) and a copy of this has been provided in Table 4 of HE01.

2.35. After an initial review of the information in Table 4 of HE01 AECOM requested confirmation whether the 31 weeks duration of works at site HDD3 and the 26 weeks at site HDD4 listed in Table 4 of HE01 will be sequential (i.e. 56 weeks in total) or concurrent. HE02 states that works on sites HDD3 and HDD4 are likely to occur concurrently. WSP state that until a construction contractor is appointed, the exact details of construction phasing and duration of works will not be known. Therefore, the approximation provided by WSP is a best estimate of construction duration at this stage of the design. **AECOM recommend that once a construction contractor is appointed, the exact details of the construction phasing and duration of works is provided.**

3. Other Matters (Those not already covered in the review above and further detailed in AECOM's email to WSP dated 4 May 2020)

AECOM Item 3.

Please confirm whether the 1-2 vehicles per hour referred to at para 7.3.1.5 includes workforce-related trips or whether these are just HGV trips. If these are just HGV trips, please provide an estimate of workforce-related vehicle movements.

WSP Response:

3.1. HE02 states that Para 7.3.1.5 of HE01 refers to HGV construction vehicles which will carry a proportion of the required workforce to site and that the remaining workforce will travel to site by minibus and work vans generating two trips at the start and end of each shift. Furthermore HE02 states that daily working hours at the HDD-3 site will be based on 12-24 hour shifts, with worker changeovers occurring at 07:00 and 19:00 and where 12-hour shifts are used, there will be approximately 12 construction vehicle trips per day and where 24-hour shifts are used this will double to 24 construction vehicle trips per day. WSP have now provided an estimate of workforce-related vehicle movements and the numbers of vehicles involved are either minimal; or the shift-changes take place outside of the conventional peak hours. Therefore **Item 3 is now considered resolved.**

AECOM Item 4.

In respect of A3(M) Junctions 2 and 3, please provide copies of the ARCADY models referred to at para 9.1.1.2, in both PDF form and as Junctions9 files, together with the source of geometric and traffic flow data for these models, i.e. annotated layout drawings and traffic flow diagrams, so that we can undertake a technical review of the modelling and fully understand the results. In the TA these junctions are reported as generating significant queueing on the A3(M) slip roads and Highways England will want to be confident in your assertion that there is no risk of these queues extending back on to the main carriageways of the A3(M)

WSP Response:

A3(M) Junction 2

3.2. Based on the calculations undertaken by AECOM, there appear to be some minor discrepancies between the flows found in the flow diagrams and those included in the models. For example the left turn from arm 3 to arm 34 (link 1006 – 1004) is shown as 703 vehicles in the matrix of traffic flows but 727 in the ARCADY model. There are other examples of the same order of magnitude. **It is recommended that either the flow diagrams or the models are corrected to ensure that these are consistent, and that clarification is provided. Furthermore, there appear to be no traffic flows from A3(M) south to Dell Piece East, AECOM recommend confirmation that this is correct.**

3.3. **AECOM note that the AM peak ARCADY analysis for this junction has not been undertaken/ provided and recommend that this is provided.**

3.4. The modelling of the junction geometry is considered acceptable by AECOM

3.5. However, lane simulation has not been undertaken at this junction as a sensitivity test. AECOM note the relative imbalance of the left and right turn on arms 2 (A3 (M) South) and 4 (A3(M) North). There appears to be no evidence of road markings or traffic signs to encourage divers to use both lanes. **AECOM therefore recommend that lane simulation is used within ARCADY as a sensitivity test at this junction, following which confirmation should be provided that the predicted queues on the A3(M) slip roads can still be accommodated within the length of the slip roads.**

3.6. The results of the current set of model runs are summarised in Table 1 below.

Table 1: A3(M) Junction 2 model results

	AM			PM		
A3 (M) Junction 2	**RFC**	**Queue Length (PCU)**	**Delay (S)**	**RFC**	**Queue Length (PCU)**	**Delay (S)**
2026 DM						
Dell Piece East	N/A	N/A	N/A	0.40	8	4
A3 (M) South	N/A	N/A	N/A	0.89	8	24
B2149 Dell Piece West	N/A	N/A	N/A	0.61	2	4
A3 (M) north	N/A	N/A	N/A	0.93	12	28
2026 DS1						
Dell Piece East	N/A	N/A	N/A	0.44	1	5
A3 (M) South	N/A	N/A	N/A	0.98	21	57
B2149 Dell Piece West	N/A	N/A	N/A	0.58	2	4
A3 (M) north	N/A	N/A	N/A	0.93	12	30
2026 DS2						
Dell Piece East	N/A	N/A	N/A	0.44	1	5
A3 (M) South	N/A	N/A	N/A	0.98	21	56
B2149 Dell Piece West	N/A	N/A	N/A	0.58	2	4
A3 (M) north	N/A	N/A	N/A	0.93	13	31

3.7. The critical arms for Highways England are the two A3 (M) off slips. In the absence of the traffic associated with the Aquind construction phase, both of these approaches are predicted to operate beyond their design capacity. The additional traffic resulting from the Aquind works in both the DS1 and DS2 scenarios is predicted to result in both A3(M) approaches operating further over their design capacity and close to their theoretical capacity, in particular the A3(M) South approach in the PM peak, when queues are expected to increase by over 13 PCUs and in total equate to approximately 120m in both the DS1 and DS2 future scenario. The slip roads are approximately 315m long (northbound) and 230m long (southbound). Whilst this predicted queue length would therefore not stretch back to the mainline carriageway, it is based on a standard model run of ARCADY in which both lanes on the slip roads are available to all traffic. A sensitivity test using lane simulation is likely to reveal a higher concentration of traffic in the busier lane of each slip road, leading to a longer queue in that lane. The resulting queue could potentially result in a severe impact on the operation of the SRN. **This sensitivity test should be undertaken before the results of the modelling are accepted**.

3.8. WSP state that this situation is reflective of the worst-case traffic management scenario assessed within the SRTM and therefore the operation of the above assessed junctions is more likely to improve upon the results presented. To minimise impact and ensure the worst-case scenario does not materialise, WSP states that the FTMS outlines a construction programme that prevents works being undertaken in close proximity to one another, thereby reducing the cumulative impacts of the construction works to a level below that assessed. An approach which AECOM welcomes. However, it does not overcome the need for a sensitivity testing described above.

A3(M) Junction 3

3.9. Based on the calculations undertaken by AECOM, the traffic flows in the model appear to correctly apply the flows in the matrices. However, **there appear to be no flows from A3(M) south to Hulbert Road East, AECOM recommend confirmation is provided that this is correct.**

3.10. The modelling of the junction geometry is considered acceptable by AECOM.

3.11. Once again it is to be noted that lane simulation has not been undertaken at this junction as a sensitivity test. AECOM note the relative imbalance of the left and right turn on arms 2 (A3 (M) South) and 4 (A3(M) North). There appears to be no evidence of road markings or traffic signs to avoid using both lanes. **AECOM therefore recommend that lane simulation is used within ARCADY as a sensitivity test at this junction.**

3.12. The results of the current set of model runs are summarised in Table 1 below.

Table 1: A3(M) Junction 3 model results

	AM			PM		
A3 (M) Junction 3	**RFC**	**Queue Length (PCU)**	**Delay (S)**	**RFC**	**Queue Length (PCU)**	**Delay (S)**
2026 DM						
Hubert Road East	0.35	1	3	0.38	1	4
A3 (M) South	0.73	3	9	0.79	4	11
Hubert Road West	0.71	3	5	0.54	1	3
A3 (M) north	0.89	8	27	1.00	29	65
2026 DS1						
Hubert Road East	0.37	1	3	0.42	1	4
A3 (M) South	0.81	5	13	0.87	7	19
Hubert Road West	0.70	3	5	0.50	1	3
A3 (M) north	0.85	6	20	0.99	26	59
2026 DS2						
Hubert Road East	0.37	1	3	0.41	1	4
A3 (M) South	0.80	4	13	0.87	7	19
Hubert Road West	0.70	3	5	0.50	1	3
A3 (M) north	0.85	6	20	0.99	26	60

3.13. The critical arms for Highways England are the two A3 (M) off slips. Prior to the addition of the proposals traffic the A3 (M) north arm is predicted to operate over its design capacity in both the AM and PM peak and at its absolute theoretical capacity in the PM peak. The impact of the proposal in both the DS1 and DS2 scenario is predicted to result in a slight reduction in the RFC both the AM and PM peaks.

3.14. With regard to the A3 (M) north arm, whilst this predicted queue length in the PM peak (circa 150m) would not stretch back to the mainline carriageway (circa 200m), it is based on a standard model run of ARCADY in which both lanes on the slip roads are available to all traffic. A sensitivity test using lane simulation is likely to reveal a higher concentration of traffic in the busier lane of each slip road, leading to a longer queue in that lane. The resulting queue could potentially result in a severe impact on the operation of the SRN. **This sensitivity test should be undertaken before the results of the modelling are accepted**.

AECOM Item 5.

In respect of A3(M) Junctions 2 and 3, are you aware of any committed developments in the vicinity, and/or any proposed schemes to upgrade these junctions and, if so, how have you accounted for this in the modelling.

WSP Response:

3.15. HE02 states that a Technical Note 'SRTM Coding Note' (contained in Appendix B of ES Appendix 22.1, Examination Library Reference: APP-448) was prepared prior to submission which set out the scope and inputs for use within the SRTM modelling to support the Transport Assessment. WSP state that the final version took account of feedback from both Portsmouth City Council (PCC) and Hampshire County Council (HCC). Table 1 of HE02 illustrates the major committed development sites included.

3.16. In terms of committed transport schemes, HE02 states that the SRTM included the signalisation of the A3(M) northbound off-slip approach to the Junction 3 roundabout. HE02 states that improvements are also proposed for the A3(M) Junction 2 as part of a development at Land East of Horndean, Rowlands Castle Road, Horndean, which proposes 800 dwellings and other complimentary uses. Both the consented scheme (55562/001), approved in 2016, and a revised scheme awaiting decision following planning committee held on 11 June 2020 (55562/005), included proposals to signalise A3(M) Junction 2. WSP note that the SRTM assumptions did not include this mitigation scheme, however it did include the demand generated by the proposed development. WSP conclude that given that the junction has been modelled within the Aquind Transport Assessment in its existing form without this mitigation, and no capacity concerns have been reported under such assessment, it is considered that a robust approach has also been taken for the modelling of this junction.

3.17. As stated above, AECOM do not yet agree that the junctions concerned necessarily operate within capacity once the impact of unequal lane usage is taken into account. Since the traffic flows used include the traffic generated by these committed developments, but the junction capacity models do not include their mitigation schemes, it is not possible to establish with any certainty what the net impact of the proposed Aquind Interconnector construction phase will be in either of the following scenarios:

- Without the committed development and without its mitigation scheme;
- With the committed development and with its mitigation scheme.

3.18. It is possible that either of these scenarios would result in a more favourable outcome than that currently presented in the TA. However, as things stand, the analysis has not shown conclusively that there will not be a severe impact at either A3(M) Junction 2 or A3(M) Junction 3 during the construction phase of the Aquind interconnector.

3.19. **AECOM therefore recommend that further work should be carried out to quantify the impact of Aquind Interconnector in each of the scenarios listed above.**

AECOM Item 7.

Please advise to what extent has the modelling undertaken to date been agreed with the two Local Highway Authorities, Hampshire County Council and Portsmouth City Council.

WSP Response:

3.20. WSP state that the 'SRTM Coding Note' (contained in Appendix B of ES Appendix 22.1, Examination Library Reference: APP-448) was issued in draft for HCC and PCC review on 12 June 2019. WSP state that this document was discussed as part of preapplication scoping meetings with HCC and PCC on 20 June, 3 and 10 July 2019 and feedback received was incorporated into a revised version issued on 12 July 2019.

3.21. Upon issue of the final version, WSP state that further comments were invited within a reasonable timeframe and to ensure project progress could be maintained, WSP advised that should no further comments be received within this period, it would be assumed that a scoping agreement had been reached. As no further comments were received, WSP state that the SRTM modelling was subsequently undertaken in accordance with the assumptions set out in the 'SRTM Coding Note'. WSP conclude that since submission of the DCO, further discussions have been held with both HCC and PCC concerning transport matters and no request for further strategic traffic modelling has been received. AECOM are satisfied with the WSP response and **Item 7 is now considered resolved.**

4. Conclusion

4.1. AECOM, on behalf of Highways England, have undertaken a review of WSP's 'Technical Note HE01-Response to Highways England Note TN02' and 'Technical Note HE02-Response to Highways England Comments' in support of the proposed Aquind Interconnector on-shore works. The review considers the documents submitted by WSP in response to AECOM's TN02 dated 22nd January 2020 and AECOM's email sent to WSP, 4th May 2020.

4.2. For ease of reference, AECOM's main comments and recommendations are presented in bold and underlined text throughout the note. Recommendations regarded as critical to the acceptability of this planning application are coloured **red.** Recommendations that are of concern but not critical to agreement of this planning application, which AECOM anticipate can be resolved at a subsequent stage of the project, are highlighted in **amber.** Recommendations that are considered to be resolved are coloured **green.**

4.3. **AECOM advise Highways England to continue to work with WSP, Hampshire County Council, Portsmouth City Council and other stakeholders to resolve the issues identified, with a view to reaching an agreed position in advance of the forthcoming DCO Hearing.**

4.4. **This should include further, more detailed, scrutiny of technical material identified in this TN which relates to specific areas of work which are likely to be of particular interest to Highways England.**

Appendix 4 – Tech Note TN04

Technical Note 04

Project:	**Highways England Spatial Planning Arrangement 2016-2020**	Job No:	**60600479 DF006.004**
Subject:	**Aquind Interconnector- Review WSP Supplementary TAA**		
Prepared by:	**Senthi Sivanathan**	Date:	**16th February 2021**
Checked by:	**Andrew Cuthbert**	Date:	**17th February 2021**
Verified by:	**Liz Judson**	Date:	**18th February 2021**
Approved by:	**Andrew Cuthbert**	Date:	**19th February 2021**

Executive Summary

This Technical Note (TN04) summarises a review on behalf of Highways England of WSP's Supplementary Transport Assessment Addendum (Document Ref 7.7.20) dated 25th January 2021 and specifically Appendix A: 'Technical Note providing a review of collision data' and Appendix B: 'Technical Note HE03 – Response to Highways England Technical Note TN03' both also dated 25th January 2021 in support of the proposed Aquind Interconnector on-shore works. These documents were submitted by WSP in response to AECOM's TN03 dated 21st August 2020. Following the review of the document submitted by WSP, AECOM make the following recommendations.

Recommendations regarded as critical to the agreement in principle of the planning application:

1. With regard to A3(M) J3, the scheme to signalise the northbound off-slip at A3(M) J3 should be implemented with road markings that permit traffic to turn left into Hulbert Road (west) from both lanes of the slip road, so as to replicate the lane choice available to drivers today in the existing layout. (para 2.23).

Recommendations regarded as important but not critical to the agreement in principle of the planning application:

2. The typo with regard to Table 41 of the WSP HE03 TN should be rectified in any forthcoming submissions (para 2.20).
3. In the period immediately prior to the beginning of the works (and as necessary throughout the period of works) temporary signage warning drivers of the potential for queuing ahead should be installed on the approaches to the northbound off-slip roads at A3(M) Junctions 2 and 3 (paras 2.25 & 3.18).
4. Queue lengths and collision records on these slip roads should be monitored throughout the works to determine whether any additional mitigation is required (para 3.19).

1. Introduction

1.1. AECOM, on behalf of Highways England, have undertaken a review of Supplementary Transport Assessment Addendum (Document Ref 7.7.20) dated 25th January 2021 and specifically Appendix A: 'Technical Note providing a review of collision data' and Appendix B: 'Technical Note HE03 – Response to Highways England Technical Note TN03' both also dated 21st January 2021 in support of the proposed Aquind Interconnector on-shore works. These documents were submitted by WSP in response to AECOM's TN03 dated 21st August 2020.

1.2. The Aquind Interconnector is a proposed cross-channel electricity cable, which will make landfall at Southsea (Portsmouth) and access the National Grid at a converter station at Lovedean, to the north of Denmead. The cable will cross the A27 Trunk Road to the east of its junction with the A2030 Eastern Road.

1.3. AECOM understand that the engineering aspects of providing a cable crossing at this point are to be dealt with by Highways England's maintaining agent and that AECOM's input into the process relates primarily to the traffic capacity and road safety implications of the wider project on the Strategic Road Network (SRN).

1.4. AECOM previously reviewed 12 documents provided in advance of the DCO application (ref EN020022) being made. These were:

- Preliminary Environmental Information Report (PEIR), dated February 2019;
- The SRTM Data Analysis Report (SRTM DAR), dated September 2019: This provides a summary of the output from a run of the Solent Area Sub-Regional Transport Model (the SRTM) and provides details of the potential impact of the proposals at a number of locations on and close to the SRN within the South Hampshire area;
- The SRTM DAR contained a copy of the draft Transport Assessment Scoping Note (TASN), dated June 2019;
- Environmental Statement (ES) Chapter 22 Transport & Traffic Chapter (ES T&T Chapter) dated 14 November 2019;
- ES Appendix 22.1 - Transport Assessment (TA) dated 14 November 2019;
- ES Appendix 22.1A – Framework Traffic Management Strategy (FTMS) dated 14 November 2019;
- ES Appendix 22.2 - Framework Construction Traffic Management Plan (FCTMP) dated 14 November 2019;
- Supplementary Transport Assessment (STA);
- Revised Framework Construction Traffic Management Plan dated October 2020;
- Revised Framework Traffic Management Strategy;
- Technical Note HE03 – Response to Highways England Technical Note TN03 dated November 2020; and
- Technical Note HE03 – Response to Highways England Technical Note TN03 dated December 2020.

1.5. AECOM's previous review, which is documented in TN03, dated 21st August 2020, made a number of recommendations. After an initial review of WSP's HE03 dated November 2020, AECOM suggested changes to the modelling via an email sent to WSP on the 27th November 2020. WSP responded to the contents of this email in response HE03 dated December 2020. After an initial review of WSP's HE03 dated December 2020 and following a meeting held on the 7th January 2021, it was agreed that additional assessments would be undertaken using an alternative future year assessment due to concerns with regard to the outputs of the Solent Sub-Regional Transport Model (the SRTM).

1.6. Although WSP have included assessments undertaken using the SRTM model in their HE03 dated January 2021, AECOM have only tabulated the key results derived from the alternative future year assessments undertaken because we regard these as most likely to be representative of future year conditions on the network when the on-shore works take place.

1.7. The purpose of this TN is to consider whether WSP's TN HE03 dated January 2021 addresses AECOM's previous concerns appropriately and therefore determine whether the potential impact of the proposal on the strategic road network (SRN) has been reasonably assessed. This TN will consider whether the impact of the development on the SRN is thought to be material and, following the analysis of the impact, whether measures are required to mitigate the impact of the development on the SRN.

1.8. For ease of reference, AECOM's main comments and recommendations are presented in bold and underlined text throughout the note. Recommendations regarded as critical to the acceptability of this planning application are coloured **red.** Recommendations that are of concern but not critical to agreement of this planning application, which AECOM anticipate can be resolved at a subsequent stage of the project, are highlighted in **amber.**

2. Critical Recommendations previously identified in AECOM's TN03

AECOM Recommendation 1.

With regard to A3(M) Junctions 2 and 3, lane simulation should be used within ARCADY as a sensitivity test and these sensitivity tests should be undertaken before the results of the modelling are accepted.

AECOM Recommendation 2.

Further work should be carried out at A3(M) Junction 2 and Junction 3 to quantify the impact of Aquind Interconnector for the following scenarios:

- Without the committed development and without its mitigation scheme;
- With the committed development and with its mitigation scheme.

Discussion:

Response to AECOM's initial comments

2.1. AECOM's previous review is documented in TN03, dated 21st August 2020 which made a number of recommendations. As further detailed in AECOM's TN02, AECOM suggested a sensitivity test using lane simulation at A3 (M) Junctions 2 and 3 to be undertaken.

2.2. As a result of AECOM's recommendations, WSP revised their modelling assessments using lane simulation at A3(M) Junctions 2 and 3. This analysis is contained in WSP's TN HE03 dated November 2020. After an initial review, AECOM suggested further changes to the modelling via an email sent to WSP on the 27th November 2020. The suggested AECOM changes to the modelling are further detailed in para 1.1.2.2 and para 1.1.2.3 of TN HE03 dated 25th January 2021. With regard to A3(M) Junction 2, WSP have accepted the comments suggested by AECOM and have updated the modelling to reflect these amendments.

2.3. With regard to A3(M) Junction 3, WSP did not accept AECOM's recommendation to remove the left turn from the offside lane of the A3 (M) northbound off-slip for traffic wishing to turn on to Hulbert Road (west). WSP state that the use of the offside lane for left turners has been found to be commonplace when reviewing existing traffic behaviour at this junction. WSP have therefore retained this movement in the modelling of the existing layout of Junction 3, A3 (M) included within TN HE03. This movement is an existing traffic behaviour, since there are no road markings to indicate that it is not permitted. AECOM can therefore agree to this movement being retained in the modelling of A3(M) Junction 3 for the existing (unsignalised) layout.

Alternative Future Year Assessment

2.4. Following a review of WSP's TN HE03 dated December 2020 and a team meeting held on the 7th January 2021, it was agreed that additional assessments would be undertaken using an alternative future year assessment. This arose from concerns with regard to the outputs of the SRTM model and the resulting queues at A3 (M) Junctions 2 and 3. This analysis is further detailed and tabulated in WSP's TN HE03 dated December 2020.

2.5. As a result, WSP have used Manual Classified Turning Count (MCTC) traffic surveys undertaken September 2019 at junction 2 and 3 of the A3 (M). The full results of these traffic surveys can be seen in Appendix 2 of WSP's TN HE03. TEMPRO growth factors have been used to growth the observed 2019 traffic flows to anticipated 2022 traffic levels. The TEMPRO growth factors used by WSP are detailed in Tables 31 and 43 of WSP's TN HE03 and the resulting 2022 base flows in Tables 32 and 44. These have been verified by AECOM.

2.6. Allowance has then been made for traffic generated by the committed developments at 'Land East of Horndean' and 'Old Park Farm, Waterlooville' which are anticipated to affect A3(M) Junctions 2 and 3 respectively. With regard to the committed development schemes, the following documents have been reviewed by WSP in order to inform the assessments undertaken:

Land to the east of Horndean (55562/005):

- Environmental Statement – Chapter 2: Site description and development proposals (December 2018);
- Environmental Statement – Technical Appendix J: Transport Assessment (December 2018)

Old Park Farm, Waterlooville (05/00500/OUT):

- Environmental Statement Volume 3A - Transport Assessment (November 2004); and
- Drawing No. 3-004032-DR-100-003-P06: A3(M) J3 Northbound Slip S278 Signalisation Scheme (March 2017)

2.7. The impact of the on-shore works for Aquind Interconnector has been assessed using the differential between the SRTM DM and DS flows at A3(M) Junctions 2 and 3 and adding these to the 2022 base flows after adding the committed development flows, to obtain a set of with- and without-Aquind flows.

2.8. This process is documented in chapters 5.2 and 5.3 of WSP's TN HE03 and AECOM are content that a logical process has been followed and that the flows derived are suitable for use in the junction capacity models.

Assessment of existing junction layouts

2.9. The ARCADY module of Junctions9 has been used to assess the capacity of the existing layouts of A3(M) junctions 2 and 3

2.10. Based on check calculations undertaken by AECOM, the traffic flows in the models appear to correctly apply the flows in the matrices to the modelling of both A3 (M) Junctions 2 and 3. Furthermore the junction geometry at A3 (M) Junctions 2 and 3 has already been checked and is considered acceptable by AECOM.

2.11. The results of the current set of model runs for A3 (M) Junctions 2 and 3 are summarised in Tables 38-39 and 48-49 of WSP's TN HE03 respectively. Results likely to be of direct interest to Highways England are summarised in Tables 1 and 2 below. It is to be noted that the results below illustrate the operation of the existing layouts at A3(M) Junctions 2 and 3 ***without*** the committed mitigation schemes. The operation of A3(M) Junctions 2 and 3 with the committed mitigation scheme is detailed later on this report.

Table 1: A3(M) Junction 2 model results: existing layout (With Lane Simulation)

		AM Peak		PM Peak	
A3(M) Junction 2 Existing Layout: 2022 DM (i.e. without Aquind construction)					
A3 (M) Junction 2 (DM)	**Lane**	**Queue Length (PCU)**	**Delay (S)**	**Queue Length (PCU)**	**Delay (S)**
A3 (M) South*	1 (Left)	1	6	2	11
	2 (Ahead / Right/ U-Turn)	1	6	2	8
A3 (M) North**	1 (Left)	1	5	1	8
	2 (Ahead / Right / U-Turn)	1	5	1	6
A3(M) Junction 2 Existing Layout 2022 DS (i.e. whilst Aquind on-shore works take place)					
A3 (M) Junction 2 (DS)		**Queue Length (PCU)**	**Delay (S)**	**Queue Length (PCU)**	**Delay (S)**
A3 (M) South*	1 (Left)	1	6	6	22
	2 (Ahead / Right/ U-Turn)	1	6	1	8
A3 (M) North**	1 (Left)	1	5	1	8
	2 (Ahead / Right / U-Turn)	1	5	1	6

* Slip Road approximately 315m long (capable of accommodating up to 54 PCU per lane)

** Slip Road approximately 230m long (capable of accommodating up to 40 PCU per lane)

2.12. The critical arms for Highways England are the two A3 (M) off slips. Both with (DS) and without (DM) the traffic associated with the Aquind construction phase, the predicted queue length for both of these approaches is minimal.

Table 2: A3(M) Junction 3 model results: existing layout (With Lane Simulation)

		AM Peak		PM Peak	
A3(M) Junction 3 Existing Layout: 2022 DM (i.e. without Aquind construction)					
A3 (M) Junction 3 (DM)	**Lane**	**Queue Length (PCU)**	**Delay (S)**	**Queue Length (PCU)**	**Delay (S)**
A3 (M) South*	1 (Left)	1	7	2	8
	2 (Left Ahead / Right/ U-Turn)	1	7	2	8
A3 (M) North**	1 (Left)	1	6	1	7
	2 (Right / U-Turn)	1	7	2	10
A3(M) Junction 3 Existing Layout 2022 DS (i.e. whilst Aquind on-shore works take place)					
A3 (M) Junction 3 (DS)		**Queue Length (PCU)**	**Delay (S)**	**Queue Length (PCU)**	**Delay (S)**
A3 (M) South*	1 (Left)	1	7	3	10
	2 (Left Ahead / Right/ U-Turn)	2	7	3	10
A3 (M) North**	1 (Left)	1	6	1	7
	2 (Right / U-Turn)	1	7	2	9

* Slip Road approximately 220m long (capable of accommodating up to 38 PCU per lane)

** Slip Road approximately 200m long (capable of accommodating up to 35 PCU per lane)

2.13. The critical arms for Highways England are the two A3 (M) off slips. Both with (DS) and without (DM) the traffic associated with the Aquind construction phase, the predicted queue length for both of these approaches is minimal.

2.14. Therefore, AECOM conclude that the proposals would not have a severe impact on the operation of the SRN in a scenario before implementation of the committed mitigation schemes at both A3 (M) Junctions 2 and 3.

Assessment of future (committed) signalised junction layouts

2.15. In terms of committed transport schemes, improvements are proposed for A3(M) Junctions 2 and 3, which comprise the full signalisation of A3(M) Junction 2 and signalisation of the A3(M) northbound off-slip approach to A3(M) Junction 3.

2.16. The alternative DM and DS scenarios have been assessed in a LINSIG model by WSP which reflects the proposals to signalise Junction 2 and partially signalise Junction 3.

2.17. With regard to A3(M) Junction 3 AECOM, as further detailed in AECOM's TN03, suggested that future year traffic modelling should match the proposed scheme design which is set out in Kier drawing 517770-HSN-DR-D-100-003 rev P06 entitled, 'A3 (M) J3 Northbound Slip S278 Signalisation Scheme'. This drawing is provided in Appendix 5 of the WSP TN HE03. WSP have stated that, in order to gain a better understanding of how this junction may operate in the future, all assessments of a signalised Junction 3 included in the TN have been undertaken for two different lane alignments on the A3 (M) South approach. These alignments are as follows:

- Use of the offside lane to turn left prohibited;
- Use of the offside lane to turn left permitted.

2.18. AECOM consider this approach to be reasonable.

2.19. The results of the LinSig models of A3(M) Junctions 2 and 3 are set out in Tables 40-41 and 50-53 of WSP's TN HE03 respectively. Results likely to be of direct interest to Highways England are summarised in Tables 3 - 5 below.

Table 3: A3(M) Junction 2 model results: Committed Layout

	AM			PM		
A3(M) Junction 2 Committed Layout: 2022 DM (i.e. without Aquind construction)						
A3 (M) Junction 2 (DM)	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**
A3 (M) South (off-slip)*	48.8	6	34	75.1	14	33
A3 (M) North (off-slip)**	35.0	4	36	55.3	8	33
Circulatory (East)	68.2	6	29	64.2	7	21
Circulatory (South)	54.9	4	7	75.5	8	17
Circulatory (West)	65.4	5	32	57.6	1	7
Circulatory (North)	59.0	4	8	62.5	8	13
A3(M) Junction 2 Committed Layout: 2022 DS (i.e. whilst Aquind on-shore works take place)						
A3 (M) Junction 2 (DS)	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**
A3 (M) South (off-slip)*	53.7	7	35	88.5	21	40
A3 (M) North (off-slip)**	42.1	4	42	52.9	7	32
Circulatory (East)	49.6	5	12	46.7	6	12
Circulatory (South)	54.7	2	5	81.1	7(***)	18
Circulatory (West)	40.9	7	33	49.8	2	8
Circulatory (North)	58.7	4	4	64.7	7	13

* Slip Road approximately 315m long (capable of accommodating up to 54 PCU per lane)
** Slip Road approximately 230m long (capable of accommodating up to 40 PCU per lane)
*** this value appears as '69' in Table 41 of TN HE03: the correct value is 6.9, which we have rounded to '7'.

2.20. With regard to A3(M) J2 south (northbound) off-slip in the PM peak the queue length increases from 14pcu in the DM to 21pcu in the DS. This is a queue of approximately 120m which would occupy less than half the length of the 315m long slip road and therefore the predicted queue length for this approach would not stretch back to the mainline carriageway. In Table 41 of the WSP HE03 TN, AECOM note a queue of 69 is predicted on the Circulatory (South) in the PM peak. Such a queue would be unacceptable. AECOM assume this is a typo as the model results indicate a queue of 6.9 pcu's in the relevant appendices. **AECOM recommend that this error is rectified in any forthcoming submissions.**

2.21. With regard to A3(M) Junction 3, as discussed earlier in this report, assessments of a signalised Junction 3 have been undertaken for two different lane alignments on the A3 (M) South approach. The results below illustrate both scenarios where the left turn from the offside lane is prohibited (Table 4) and permitted (Table 5):

Table 4: A3(M) Junction 3 model results: Committed Layout (With Left Turn Prohibited)

	AM			PM		
A3(M) Junction 3 Committed Layout: 2022 DM (i.e. without Aquind construction)						
A3 (M) Junction 3 (DM)	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**
A3 (M) South (off-slip)*	65.6	10	9	101.6	43	83
A3 (M) North (off-slip)**	54.8	1	7	80.0	2	14
Circulatory (South)	141.1	86	594	100.9	24	104
A3(M) Junction 3 Committed Layout: 2022 DS (i.e. whilst Aquind on-shore works take place)						
A3 (M) Junction 3 (DS)	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**
A3 (M) South (off-slip)*	72.3	12	11	109.2	83	191
A3 (M) North (off-slip)**	49.6	1	7	76.7	2	12
Circulatory (South)	142.8	89	609	103.8	31	138

* Slip Road approximately 220m long (capable of accommodating up to 38 PCU per lane)

** Slip Road approximately 200m long (capable of accommodating up to 35 PCU per lane)

Table 5: A3(M) Junction 3 model results: Committed Layout (With Left Turn Permitted)

	AM			PM		
A3(M) Junction 3 Committed Layout: 2022 DM (i.e. without Aquind construction)						
A3 (M) Junction 3 (DM)	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**
A3 (M) South (off-slip)*	87.5	11	45	68.1	10	20
A3 (M) North (off-slip)**	54.2	1	7	80.0	2	14
Circulatory (South)	40.1	5	9	66.6	9	20
A3(M) Junction 3 Committed Layout: 2022 DS (i.e. whilst Aquind on-shore works take place)						
A3 (M) Junction 3 (DS)	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**D.O.S (%)**	**MMQ (PCU)**	**Delay (s/PCU)**
A3 (M) South (off-slip)*	98.1	19	83	70.3	11	20
A3 (M) North (off-slip)**	49.0	1	7	76.7	2	12
Circulatory (South)	39.5	5	9	71.3	10	22

* Slip Road approximately 220m long (capable of accommodating up to 38 PCU per lane)

** Slip Road approximately 200m long (capable of accommodating up to 35 PCU per lane)

2.22. Table 4 represents a scenario where at the A1(M) South off-slip, the left turn is prohibited from the offside lane. This reflects the road markings shown on Kier drawing 517770-HSN-DR-D-100-003 rev P06 entitled, 'A3 (M) J3 Northbound Slip S278 Signalisation Scheme' which illustrates the proposed mitigation scheme. In this scenario the A3(M) South off-slip queues in the PM peak are expected to increase by 40 PCUs, from 43 to 83 PCUs. The slip roads are approximately 220m long (south) and 200m long (north). Therefore, in the in the DM scenario, the predicted queue length on the A3(M) South off-slip (250m) would slightly exceed the length of the slip road, and in the DS it would significantly exceed the length of the slip road and stretch back to the mainline carriageway. This would be regarded as a 'severe impact' in terms of Circular 02/2013. Furthermore, the queue at the circulatory south in both the DM (circa 495m) and DS scenario (512m) would significantly exceed the stacking capacity (circa 114m). In reality this would not be permitted for capacity and safety reasons and additional green time would be required to ensure the queues did not exceed the stacking capacity. Less green time would therefore be available for the A3(M) South off-slip which would result in queuing being even longer than shown in the model.

2.23. **AECOM recommend that the scheme to signalise the South off-slip at A3(M) J3 should be implemented with road markings that permit traffic to turn left into Hulbert Road (west) from both lanes of the slip road, so as to replicate the lane choice available to these drivers today in the existing layout.** This would effectively avoid the severe queuing problems on both the slip road and the circulatory carriageway that would occur if the left turn was prohibited from using the offside lane.

2.24. Table 5 shows that, where the left turn is permitted, A3(M) J3 south (northbound) off-slip in the AM peak the queue length increases from 11pcu in the DM to 19pcu in the DS which is a queue of circa 110m. This would occupy approximately half the length of the 220m long slip road and therefore the predicted queue is not likely to stretch back to the mainline carriageway.

2.25. **However, AECOM recommend that temporary fixed or variable message signs should be provided on the A3(M) northbound approaches to this junction to warn drivers of queuing traffic ahead, to address the predicted increase in queueing, even if the left turn is permitted from the offside lane.**

3. Collision Analysis

3.1. WSP have undertaken collision analyses of four Strategic Road Network (SRN) junctions; A3(M) Junctions 2 and 3, Portsbridge Roundabout and the A2030/ A27 junction to determine whether it is likely that the construction of the Proposed Development will exacerbate existing collision trends (as a result of the reassignment of traffic away from traffic management associated with construction of the Onshore Cable Route). The WSP collision analyses are held within Appendix 1 of 'Technical Note HE03 – Response to Highways England Technical Note TN03', produced by WSP, dated January 2021. Appendix 1 is entitled 'Collision Analysis of Highways England Roads' (dated January 2021, report reference TN HE04) and analyses recorded collision data provided by Hampshire Constabulary covering a five-year period between 01/10/2014 and 30/09/2019.

3.2. The aim of the TN HE04 assessment is to identify existing collision cluster sites at the four Strategic Road Network (SRN) junctions named above to determine whether it is likely that the construction of the Proposed Development will exacerbate existing collision trends (as a result of the reassignment of traffic away from traffic management installed in association with construction of the Onshore Cable Route).

3.3. AECOM have undertaken an in-depth review of the collision analyses undertaken by WSP at the two locations where noted increases in queueing are predicted, as follows:

- A3(M) Junction 2 Northbound Off-slip (where queue length increases from 14 PCU (80m) in the DM, to 21PCU in the DS (120m))
- A3(M) Junction 3 Northbound Off-slip (where queue length increases from 11 PCU (63m) in the DM, to 19PCU in the DS (110m))

A3(M) Junction 2

3.4. Section 2 of TN HE04 covers the A3(M) Junction 2, which includes A3(M) (North), Dell Piece East B2149, A3(M) (South) and Dell Piece West B2149; the analysis includes the A3(M) slip roads.

3.5. TN HE04 states that a total of 25 recorded collisions were recorded at the above location; of which one resulted in serious injuries and the remaining 24 in slight injuries. All involved cars only, with exception of one involving a motorcyclist and one involving an LGV.

3.6. As part of TN04, a review of collision types was undertaken; WSP state that 21 of the collisions which occurred were rear end shunt type collisions, of which nine occurred on the slip roads indicating a potential existing cluster of collisions of this type. It is stated that all nine of the rear-end shunt collisions that occurred on the off-slips were at the location where the off-slips from the A3(M) 'merge with the roundabout'. The WSP collision review states that 'in terms of locations, the exact locations are fairly evenly distributed with no concentration on any particular part of the junction (such as the slip roads). This therefore corroborates the view that reassignment of traffic to this junction would not be intensifying use of a particularly hazardous junction as the data do not suggest any location-specific factor which might indicate a flaw in the design of part of the junction'.

3.7. Full raw collision data has not been provided; however Appendix A of TN HE04 provides a collision report summary. AECOM have used this information to undertake an independent review to determine whether the WSP conclusions above can be agreed, particularly with regards to the A3(M) northbound off-slip, where queueing is predicted to increase notably as the result of the Scheme. It should be noted that high-level assumptions will have to be made based on the limited level of detail provided in the summary tables in Appendix A.

3.8. The AECOM review has found that six collisions appear to have occurred on the A3(M) northbound off slip at Junction 2. These are summarised in Table 6 below:

Table 6: Collision Analysis: A3(M) Junction 2 northbound off-slip

Collision Ref	Severity	Collision Type	Location
140437106	Slight	Rear End Shunt	Roundabout approach
160218949	Slight	Human Error (casualty travelling on bonnet of car fell off)	On NB off slip – exact location unclear
160324935	Slight	Rear End Shunt	Roundabout approach
44170120346	Slight	Rear End Shunt	Roundabout approach
44190141173	Slight	Rear End Shunt	Roundabout approach
44190220416	Slight	Rear End Shunt	Roundabout approach

3.9. Of the six collisions that occurred on the A3(M) Junction 2 northbound off-slip, five were rear end shunt collisions that occurred at the roundabout approach; this indicates that there is an existing collision cluster and pattern at this location. It is acknowledged that all collisions occurred on the roundabout approach and therefore the increased queue lengths are unlikely to exacerbate this collision trend; however, the additional traffic using the A3(M) northbound off slip at this location as a result of the Proposed Development could exacerbate the collision concern at this location. Table 2.2 of TN HE04 shows that there will be an increase in 183 vehicles in the DS1 Scenario, and 180 in the DS2 scenario (during the PM peak); however it is unclear what proportion of these vehicles will be using the northbound off-slip. AECOM suggest that measures to address the potential increase in collisions on the northbound off-slip, as a result of increased traffic flows on the A3(M) northbound off slip, may need to be considered (see recommendation at 3.18, below).

A3(M) Junction 3

3.10. Section 3 of TN HE04 covers the A3(M) Junction 3, which includes A3(M) (North), Hulbert Road (West), Hulbert Road (East) and A3(M) (South); the analysis includes the A3(M) slip roads.

3.11. TN HE04 states that a total of 40 recorded collisions were recorded at the above location; of which five resulted in serious injuries and the remaining 35 resulted in slight injuries. TN04 states that one collision involved a pedestrian, one involved a pedal cyclist, four involved motorcycles and the remaining collisions involved cars only.

3.12. As part of TN04, a review of collision types was undertaken; WSP state that 31 of the collisions which occurred were rear end shunt type collisions, of which 19 occurred on the slip roads, indicating a potential existing pattern of collisions of this type. It is stated that 18 of the 19 rear end shunt collisions occurred on the off-slips where the off-slips 'merge with the roundabout'. The WSP collision review states that 'in terms of locations, the exact locations of the rear-end collisions are predominantly at the intersection of the off-slip roads with the circulatory carriageway, which might potentially suggest an existing safety issue, probably due to drivers observing on-coming traffic to their right, then entering the roundabout at speed unaware of the closeness of a vehicle right in front'.

3.13. Full raw collision data has not been provided; however Appendix A of TN HE04 provides a collision report summary. AECOM have used this information to undertake an independent review to determine whether the WSP conclusions above can be agreed, particularly with regards to the A3(M) northbound off-slip, where queueing is predicted to increase substantially as the result of the Scheme. It should be noted that high-level assumptions have been made based on the limited level of detail provided in the summary tables in Appendix A.

3.14. The AECOM review has found that 19 collisions appear to have occurred on the A3(M) northbound off slip at Junction 3. These are summarised in Table 7 below:

Table 7: Collision Analysis: A3(M) Junction 3 northbound off-slip

Collision Ref	Severity	Collision Type	Location
44190148585	Slight	Rear End Shunt	Roundabout approach
44170042205	Slight	Rear End Shunt	On NB off slip – exact location unclear
44170396122	Slight	Rear End Shunt	Roundabout approach (unclear whether NB or SB off slip)
140410784	Serious	Rear End Shunt	Roundabout approach
44190192019	Slight	Rear End Shunt	Roundabout approach
140449148	Slight	Rear End Shunt	On NB off slip – exact location unclear (failed to brake for heavy traffic)
44180359377	Slight	Rear End Shunt	Roundabout approach
44170183953	Slight	Rear End Shunt	Roundabout approach (unclear whether NB or SB off slip)
150394425	Serious	Loss of Control	Roundabout approach
160364235	Slight	Rear End Shunt	On NB off-slip – exact location unclear (failed to brake for traffic queueing to enter roundabout)
150053848	Slight	Rear End Shunt	Roundabout approach
44190273613	Slight	Rear End Shunt	Roundabout approach
44180041457	Slight	Rear End Shunt	On NB off-slip – exact location unclear (failed to slow in time)
44190281335	Slight	Rear End Shunt	On NB off-slip – exact location unclear (occurred within traffic waiting to join roundabout)
44190303147	Slight	Rear End Shunt	Roundabout approach
160012651	Slight	Loss of Control	Roundabout approach
44190342812	Slight	Rear End Shunt	On NB off-slip – exact location unclear (failed to slow in time)
44180089321	Slight	Rear End Shunt	Roundabout approach
44190244256	Slight	Rear End Shunt	Roundabout approach

3.15. Of the 19 collisions that occurred on the A3(M) Junction 3 northbound off-slip, 17 were rear end shunt collisions. At least nine of the rear end shunt collisions occurred on the approach to the roundabout and it is unclear from the collision descriptions provided exactly where the remaining eight occurred. Therefore, the rear end shunts known to occur at the roundabout approach indicate that there is a collision cluster and pattern at this location. It is acknowledged that the collision pattern on the roundabout approach is unlikely to be exacerbated by the increased queueing at this location; however, the additional traffic using the A3(M) northbound off slip at this location as a result of the Proposed Development could exacerbate this collision concern. Table 3.2 of TN HE04 shows that there will be an increase in 160 vehicles in the DS1 Scenario, and 158 in the DS2 scenario (during the AM peak); however it is unclear what proportion of these vehicles will be using the northbound off-slip. AECOM suggest that measures to address the potential increase in collisions on the northbound off-slip, as a result of increased traffic flows on the A3(M) northbound off slip, may need to be considered (see recommendation at 3.18, below).

3.16. Collision plots alone are typically unreliable sources of information when determining the exact locations of collisions, however the collision plot along with the descriptions provided give AECOM some confidence that the majority of the eight remaining collisions occurred on the approach to the roundabout. However, there is a small chance that the remaining eight rear end shunt collisions may indicate a further rear end shunt collision pattern further south along the slip road, which may be exacerbated by the additional queueing predicated at this location.

Conclusion

3.17. As a significant number of the rear end shunt collisions appear to be located at the slip road/ roundabout entries, and therefore it is reasonable to suggest could be 'restart' collisions caused by gap-seeking vehicles attempting to join the roundabout circulatory and colliding with the vehicle in front which had not yet pulled away, it is considered that a number of these collisions would be addressed by the proposed signalisation of A3(M) J2 and part signalisation of A3(M) J3 by third parties;

3.18. In order to pre-emptively address the potential for rear end shunt collisions associated with the rear end of the queues which are likely to form on these slip roads **it is recommended that in the period immediately prior to the beginning of the works (and as necessary throughout the period of works) temporary signage warning drivers of the potential for queuing ahead are installed**

3.19. **Queue lengths and collision records on these slip roads should be monitored throughout the works to determine whether any additional mitigation is required.**

4. Other Matters

4.1. The following non-critical recommendations further detailed in AECOM'S TN03 have subsequently been resolved in AECOM's BN02 & subsequent correspondence with WSP:

- For both access and egress at the Farlington playing fields with regard to over sized vehicles, traffic management should be used;
- Access by a 20t tipper/11.7m rigid vehicle at the Farlington playing fields should also take place under traffic management control;
- Proposed restrictions on the movement of HGV's during peak periods will still need to be more robust and should be formalised as protective provisions in the DCO;

- The promoter of the Aquind Interconnector should work collaboratively with Highways England to co-ordinate matters such as temporary traffic signage in the event that the construction phases of the M27 J4 – J11 Smart Motorway Project and Aquind Interconnector scheme overlap; and

- Once a construction contractor is appointed, the exact details of the construction phasing and duration of works should be provided.

4.2. The following non-critical recommendations further detailed in AECOM'S TN03 have subsequently been resolved:

- With regard to A3(M) Junction 2, the flow diagrams or the models should be corrected to ensure that these are consistent, and that clarification is provided. Furthermore, there appears to be no flows from A3(M) south to Dell Piece East and confirmation should be provided that this is correct (para 3.2);

- With regard to A3(M) Junction 2, the AM peak ARCADY analysis for this junction should be provided (para 3.3); and

- With regard to A3(M) Junction 3, there appears to be no flows from A3(M) south to Hulbert Road East, and confirmation should be provided that this is correct.

5. Conclusion

5.1. AECOM, on behalf of Highways England, have undertaken a review of Supplementary Transport Assessment Addendum (Document Ref 7.7.20) dated 25th January 2020 and specifically Appendix A: 'Technical Note providing a review of collision data' and Appendix B: 'Technical Note HE03 – Response to Highways England Technical Note TN03' both also dated January 2021 in support of the proposed Aquind Interconnector on-shore works. These documents were submitted by WSP in response to AECOM's TN03 dated 21st August 2020.

5.2. For ease of reference, AECOM's main comments and recommendations are presented in bold and underlined text throughout the note. Recommendations regarded as critical to the acceptability of this planning application are coloured **red.** Recommendations that are of concern but not critical to agreement of this planning application, which AECOM anticipate can be resolved at a subsequent stage of the project, are highlighted in **amber.**

Appendix 5 – Tech Note HE01

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE01 – Response to Highways England Note TN02

The Planning Act 2008

Document Ref: HE01

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE01 – Response to Highways England Note TN02

PINS REF.: EN020022

DOCUMENT: HE01

DATE: APRIL 2020

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE01 – Response to Highways England Note TN02

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	Document Name
Revision	002
Document Owner	WSP UK Limited
Prepared By	Daniel Parsons
Date	12/04/20
Approved By	Chris Williams
Date	12/04/20

CONTENTS

TABLES

APPENDICES

1. INTRODUCTION

1.1.1.1. This Technical Note (HE01) has been prepared in response to representation made by AECOM on behalf of Highways England (HE) in relation to the submission documents for the AQUIND Interconnector DCO application. Comments made by HE were made in the document entitled 'Initial Review of Documentation Technical Note TN02' dated 22 January 2020.

1.1.1.2. This Technical Note seeks to respond to these comments by using a structure that aligns with the order of the themes contained within TN02. As such the remainder of this Technical Note is set-out in the following sections consideration is given to the following aspects:

- Proposed Works – Horizontal Directional Drilling (HDD) Construction Traffic Routing;
- Policy Review;
- Consultation;
- Abnormal loads;
- Collision Data;
- Site Access Arrangements for HDD-3 Langstone Harbour; and
- Management of construction traffic
- Traffic impacts to the sections of the Strategic Road Network (SRN); and
- Duration of Works.

2. PROPOSED WORKS - HDD CONSTRUCTION TRAFFIC ROUTING

2.1.1.1. In TN02 HE expressed a concern relating to access to the proposed HDD location at Farlington Playing Fields and under the A27, this being known as HDD-3. Some construction traffic may also access Farlington Playing Fields to access HDD-4, although this will be mainly be serviced via Fitzherbert Road and Sainsbury's car park. Construction traffic destined for HDD-3 and HDD-4 will reach Farlington Playing Fields via the A27 and A2030 Eastern Road.

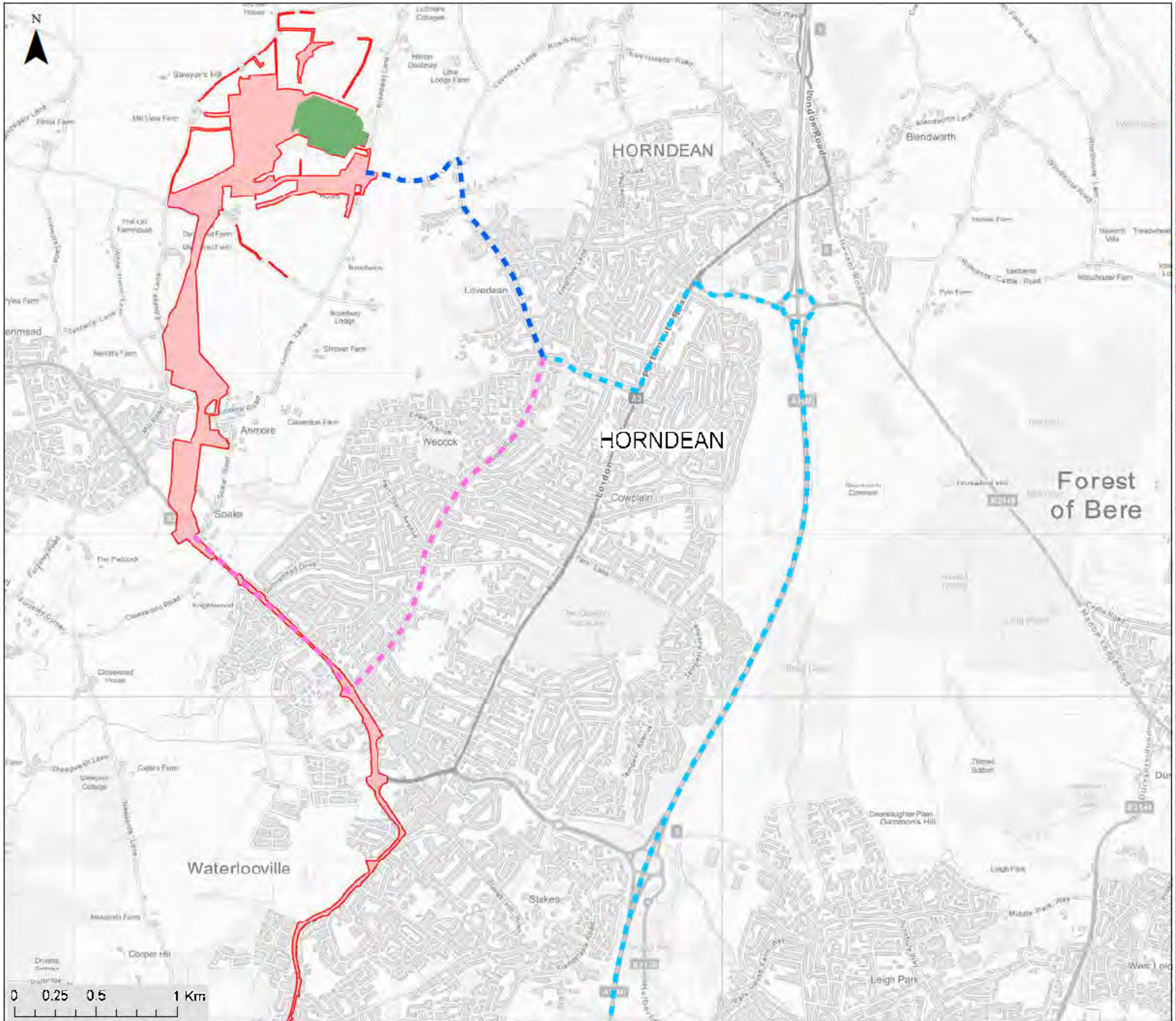
2.1.1.2. For reference construction traffic routes to the six HDD locations from the Convertor Station are proposed as follows:

- **HDD-1 Landfall**: Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A27 Havant Bypass – A2030 Eastern Road – A2030 Velder Avenue – A288 Milton Road – A288 Eastney Road – Bransbury Road – Fort Cumberland Road;
- **HDD-2 Eastney and Milton Allotments:** Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A27 Havant Bypass – A2030 Eastern Road – A2030 Velder Avenue – A288 Milton Road – Locksway Road and Kingsley Road;
- **HDD-3 Langstone Harbour:** Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A27 Havant Bypass – A2030 Eastern Road;
- **HDD-4 Farlington Railway Crossing:** Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A27 Havant Bypass – A2030 Eastern Road / Fitzherbert Road;
- **HDD-5 Kings Pond:** Broadway Lane – Day Lane – Lovedean Lane – Milton Road – B2150 Hambledon Road; and
- **HDD-6 Milton Common:** Broadway Lane – Day Lane – Lovedean Lane – A3 Portsmouth Road – B2149 Dell Piece West – A3(M) Junction 2 – A3(M) – A27 Havant Bypass – A2030 Eastern Road – Moorings Way.

2.1.1.3. The sections of the SRN utilised by these construction traffic routes are illustrated in **Figures 1** below. Each of the construction traffic routes outlined above have been devised to maximise the use of the SRN and the classified road network where practical, and minimise the overall distance travelled where possible.

2.1.1.4. Access to the HDD situated in Farlington Playing Fields (**HDD-3 and HDD-4),** will be facilitated via the priority-controlled junction with the Farlington Playing Fields Car Park / Shell Filling Station / Holiday Inn access road as demonstrated in the inset map contained within **Figure 1 Sheet 2.** It will not be accessed through the Farlington Marshes car park on the southern side of the junction with the A27 Havant Bypass / A2030 Eastern Road. This is because the entry / exit pits for the two cable circuits will be situated in Farlington Playing Fields and Kendall's Wharf for HDD-3.

2.1.1.5. Further assessments of the access into Farlington Playing Fields is included in Section 7 and 9 of this Technical Note.



Reproduced from Ordnance Survey digital map data © Crown copyright [date]. All rights reserved. Licence number [add number].
© Crown copyright material is reproduced with the permission of Land Registry under delegated authority from the Controller of HMSO. This material was last updated in [date] and may not be copied, distributed, sold or published without the formal permission of Land Registry. Only an official copy of a title plan or register obtained from the Land Registry may be used for legal or other official purposes.
May contain public sector information licensed under the Open Government Licence v 3.0

Construction Traffic Routes

- Route to HDD-1
- Route to HDD-2
- Route to HDD-4
- Route to HDD-5
- Route to HDD-6
- Route to HDD-1 & 2
- Route to HDD 3 & 4
- Route to HDD-1, 2 & 6
- Route to HDD-1, 2, 3, & 6
- Route to HDD-1, 2, 3, 4 & 6
- Route to all HDD sites
- Order Limits

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

REV	DATE	BY	DESCRIPTION	CHK	APP

FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK
T+ 44 (0) 020 7314 5000
wsp.com

AQUIND

AQUIND Interconnector

TITLE

Figure 1
HDD Construction Traffic Routing
Sheet 1

EN020022-TTN-HDD

REV NO.
01

Construction Traffic Routes

- Route to HDD-1
- Route to HDD-2
- Route to HDD-4
- Route to HDD-5
- Route to HDD-6
- Route to HDD-1 & 2
- Route to HDD 3 & 4
- Route to HDD-1, 2 & 6
- Route to HDD-1, 2, 3, & 6
- Route to HDD-1, 2, 3, 4 & 6
- Route to all HDD sites
- Order Limits

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

REV	DATE	BY	DESCRIPTION	CHK	APP

FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK
T+ 44 (0) 020 7314 5000
wsp.com

AQUIND

AQUIND Interconnector

TITLE

Figure 2
HDD Construction Traffic Routing
Sheet 2

EN020022-TTN-HDD

REV NO. 01

3. POLICY REVIEW

3.1.1.1. As requested by HE, a policy review of "The Strategic Road Network: Planning for the Future" and (DfT) Circular 02/2013 has been undertaken to demonstrate that the requirements of these will be met by the applicant.

3.2. THE STRATEGIC ROAD NETWORK: PLANNING FOR THE FUTURE, HIGHWAYS ENGLAND, 2015

3.2.1.1. This document acts as a guide for third parties when working with HE on planning matters. Paragraph 28 outlines the planning approaches that have been adopted by HE. These are separated into five values, describing the type of engagement with the planning system. These are as follows:

- **Engage Early** – Applicants preparing plans which affect the SRN, are encouraged to engage as early as possible. This to ensure that all parties are given sufficient time to understand the impacts of the proposed development on the SRN, and agree the most appropriate action with an outcome that ensures the proposal is deliverable;
- **Work Openly** – HE is committed to being a proactive partner, working collaboratively with applicants to develop proposals;
- **Share Evidence** – HE aims to provide information about the SRN, including traffic flow data and asset information as **required**;
- **Share Knowledge and Experience** – HE aims to share knowledge on topics such as traffic management, driver behaviour and **delivery** of traffic schemes, to aid in the delivery of a robust proposal from a traffic perspective; and
- **Work Collaboratively** – As a key stakeholder, HE will respond to requests for formal representations as part of a consultation in a timely manner with full regard to statutory requirements.

3.2.1.2. AQUIND Limited have been engaging with HE on the development proposals since May 2018 and have continued to consult with HE throughout the pre-application period. This will also continue during the pre-examination and examination stages as required.

3.2.1.3. The primary function of the SRN is to facilitate the safe and efficient movements of goods and people in a manner which promotes the delivery of sustainable economic growth (paragraphs 29-39). HE is committed to fulfilling environmental and social objectives by reducing single occupancy car-use and supporting sustainable transport options. Consequently, applications are more likely to be accepted by HE if the forecast traffic flows from a proposed development:

- Can be accommodated within the existing capacity of a link or junction of the SRN; and / or
- Do not increase demand for a section that is already at full capacity (taking into account the **mitigation** effects of any travel plan and traffic management initiatives that may be agreed).

3.2.1.4. The analysis of the development proposals contained within the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1) and this Technical Note HE01 show that the traffic flows associated with the development, and the temporary change in flows through traffic redistribution, can be accommodated within the existing capacity of links and junctions of the SRN.

3.2.1.5. For any proposed development that affects the SRN, highways issues should be identified, addressed and set out in the relevant section of any Transport Assessment. Paragraph 100 states that as part of a planning application, assessments should be carried out for the construction and operational phases of a proposed development. Traffic mitigation measures should adopt the "avoidance" principle. This involves undertaking reasonable steps to minimise the level of physical mitigation required by utilising travel plans, development phasing and HGV booking systems. The Transport Assessment provides a detailed assessment of the impacts of the construction phase of the proposed development, while the operational phase will generate only a very minor number of vehicle movements. In addition, the Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2) includes details of how construction traffic will be managed, monitored and enforced during the construction programme The Construction Traffic Management Plan also includes a Framework Construction Worker Travel Plan, which aims to reduce the number of single occupancy car trips to and from the Converter Station construction compound.

3.2.1.6. Finally, Paragraph 103 adds that as part of the planning application, applicants should actively incorporate measures that reduce the need to travel, promote sustainable transport choices and create sites which are accessible to a wide range of road users including non-motorised users. Such an approach allows impacts to be managed, in a way which minimises delays and congestion on the SRN. As stated above, the Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2) includes a Framework Construction Worker Travel Plan, which aims to reduce single occupancy car trips made to and from the Converter Station construction compound.

3.3. THE STRATEGIC ROAD NETWORK AND THE DELIVERY OF SUSTAINABLE DEVELOPMENT, DEPARTMENT FOR TRANSPORT (DFT) CIRCULAR 02/2013

3.3.1.1. Highways England (formerly the Highways Agency) is an executive agency of the DfT and is responsible for operating, maintaining and improving the SRN within England on behalf of the Secretary of State for Transport. DfT Circular 02/2013 sets out how Highways England engages with applicants to deliver sustainable developments that facilitate economic growth whilst simultaneously safeguarding the primary purpose of the SRN.

3.3.1.2. Paragraphs 7-11 stipulate the importance of the SRN in enabling growth through providing safe and reliable journeys.

3.3.1.3. When assessing the impact of a development, forecasts should be compared against the ability of the existing network to cope with any extra traffic over a 10-year review period (paragraphs 25-27). If forecasts indicate that there is the potential for capacity problems on sections of the SRN, applicants are expected to bring forward initiatives to reduce traffic generation and promote sustainable travel choices. Alternatively, if the extra traffic can be accommodated by the existing infrastructure, further mitigation will not be sought. The Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1) provides a robust assessment of the construction phase of the development proposals, while the operational phases will generate only a very minor number of vehicle movements. As such, the assessment of a 10-year review period is not appropriate for the development proposals.

3.3.1.4. The role of travel plans in promoting the use of sustainable transport modes is outlined in detail within paragraphs 28-30). It is noted that use of sustainable transport helps managed the impact of a development on the road network and the need to major transport infrastructure. As stated above, the Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2) includes a Framework Construction Worker Travel Plan, which aims to reduce single occupancy car trips made to and from the Converter Station construction compound.

3.3.1.5. Paragraph 31-32 stipulate that traffic management measures should be deployed to actively regulate and mange traffic flows. This is necessary to ensure that the available capacity on the SRN is utilised in the most efficient manner possible and may be required when travel plan measures alone do not suffice. While not applicable to the SRN, a Framework Traffic Management Strategy (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2) has been submitted that details traffic management required to facilitate construction of the Onshore Cable Route along the local highway network.

3.3.1.6. Applicants must also ensure that an adequate assessment is undertaken for the full range of environmental impacts associated with a proposal (paragraphs 45-48). This applies to any temporary construction works, the permanent transport impacts of a development and any environmental impacts from the SRN on the proposal. Where negative impacts transpire outside of a highway boundary, mitigation measures should be located outside of the highway boundary for the SRN. Sufficient information should be provided in Transport Assessments to help establish the likely environmental impacts and aid local authorities in their decision making regarding the most appropriate form of mitigation. An Environmental Statement has been submitted as part of the application, while the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1) provides a robust assessment of the construction phase of the development proposals.

4. CONSULTATION

4.1.1.1. The consultation material referred to at ES T&T Chapter 22.3.2 is provided within Appendix 22.3 Consultation Responses (Environmental Statement Document APP-451). A copy of APP-451 is provided in **Appendix 1** of this Technical Note for ease of reference.

5. ABNORMAL LOADS

5.1.1.1. The applicant is awaiting further comments from HE following their review of the Framework Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2).

6. COLLISION DATA

6.1.1.1. The applicant is awaiting further comments from HE following their review of the Framework Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2).

7. SITE ACCESS ARRANGEMENTS FOR HDD-3 LANGSTONE HARBOUR SITUATED IN FARLINGTON PLAYING FIELDS

7.1.1.1. This section addresses comments from HE regarding access arrangements for construction traffic entering and egressing Farlington Playing Fields from the A2030 Eastern Road. Farlington Playing Fields is the proposed location for HDD-3 Langstone Harbour where the Onshore Cable Corridor would pass under the A27 Havant Bypass to / from Portsea Island.

7.1.1.2. Access into Farlington Playing Fields would be via the existing priority-controlled junction just north of the signal-controlled junction with Walton Road.

7.1.1.3. It should be noted that the access route into Farlington Playing Fields also serves the Shell Filling Station and the Holiday Inn Express Hotel. Given these existing land-uses, it can be seen that this junction already accommodates HGV movements most notably in the form of an Articulated Fuel Tanker. It is therefore an acceptable route for HGV traffic associated with the construction of the Onshore Cable Corridor.

7.2. ADEQUACY OF CURRENT JUNCTION LAYOUT

7.2.1.1. Swept path analysis has been undertaken of the entrance and egress routes into Farlington Playing Fields as illustrated in WSP Drawing 0616-ATR-002, which is included within Appendix 2. For the purposes of this assessment, a custom cable drum delivery vehicle referred to as ‘Hammar 155’ was utilised as this will be largest vehicle that is required to enter / exit Farlington Playing Fields. This consists of an articulated HGV with a tractor unit and low loader trailer which is 14.65m long and 3.95m wide. A clearance of 700m has been incorporated into the vehicle dimensions to represent the overhang of the cable drum.

7.2.1.2. The cable drum delivery vehicle would need to access the site twice to deliver one cable drum for each circuit. For both ingress and egress, a banksman would be used to provide a safe and controlled means of access. Access by these vehicles would be restricted to outside of the peak hours.

7.2.1.3. As shown in WSP Drawing 0616-ATR-002, the cable drum delivery vehicle can access the site by straddling the offside and nearside lanes on the northbound carriageway of the A2030 Eastern Road. At the entrance to the Farlington Playing Fields Car Park, the cable drum delivery vehicle would over-run the existing central island and the grass verge on the inside corner (nearside of vehicle). On the outside of the corner, there would be some vehicle overhang, but the vehicle track remains within the extent of the carriageway.

7.2.1.4. The verge on the inside corner of the entrance to Farlington Playing Fields Car Park, has a small earth-bank, which already appears to have been partly flattened through existing vehicle use and there is no kerb where the over-run is anticipated to occur. This creates a wider carriageway width than shown on the OS mapping, but if required the bank will be temporarily flattened to facilitate access. The earth-bank will be reinstated once works are completed. The central island is in a poor state of repair and would be removed to facilitate access and reinstated on completion of construction

7.2.1.5. For egress, it is proposed for the cable drum delivery vehicle to use the same access point which will be used for entry, with the vehicle turning left onto the A2030 Eastern Road southbound carriageway under control of a banksman. This is to avoid conflicts with vehicles using the Shell Filling Station and the Holiday Inn Site.

7.2.1.6. Vehicle overhang of the existing grass verges at the entrance to the Farlington Play Fields car park would occur on the nearside and offside of the vehicle. Like ingress, the existing central island would be over-run. To turn left onto the A2030 Eastern Road southbound carriageway, vehicle over-run would occur on the nearside verge and vehicle overhang would occur on the central island separating the two carriageways of the A2030 Eastern Road. The existing Advanced Directional Sign on the nearside verge and guard-railing situated in the central island would not be affected.

7.3. CAPACITY IMPACT ON EXISTING JUNCTIONS NEAR TO THE SITE ACCESS

7.3.1.1. This section relates to comments made regarding the capacity of the right turn into the site for HHD-3 (Farlington Playing Fields) and the likelihood of adverse impacts on the A2030 Eastern Road / Walton Road signal-controlled junction and the A27 Havant Bypass / A2030 Eastern Road signal-controlled roundabout.

7.3.1.2. As outlined in section 2.7.6 of the Framework Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2), the following vehicles will be used for HDD works:

- Two abnormal loads for delivering the cable drums;
- Low loaders for plant deliveries;

- HGVs for material deliveries, including water, fuel, bentonite etc;
- HGV with loader crane for moving equipment from pipe side to rig side, delivery of cabins, storage and welfare;
- Vacuum tanker for mud return;
- Water tankers;
- Grab wagon for muck away;
- 20t tipper for stone deliveries; and
- Light vehicles.

7.3.1.3. The majority of these will vehicles will be infrequent. Daily movements are only likely to occur for the HGVs with material deliveries, the water tankers, the grab wagon, the 20t tipper for stone deliveries and the light vehicles carrying personnel to site.

7.3.1.4. As stipulated in the Framework Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2), construction traffic movements for HDD locations will occur over a 12-24-hour period but be prohibited during the conventional peak periods (08:00-09:00 and 17:00-18:00). This would be enforced via protective permissions contained within the Development Consent Order (DCO)

7.3.1.5. Hourly construction traffic movements will be very low (generally 1-2 per hour) and would occur outside of the peak hours of 08:00-09:00 and 17:00-18:00 for all HDD locations. Such vehicular numbers are not considered significant. Therefore, the capacity of the right turn into Farlington Playing Fields car park and the signal-controlled junction with the A2030 Eastern Road / Walton Road will not be affected. Likewise, given the low level of forecast vehicle movements, it is not expected that there will be any queuing back to the signal-controlled roundabout with the A27 Havant Bypass / A2030 Eastern Road.

7.4. NUMBER OF U-TURNS AT THE ROUNDABOUT WITH THE A2030 EASTERN ROAD AND A27 HAVANT BYPASS

7.4.1.1. It is not anticipated that any construction traffic will need to perform U-turns at this junction. Instead traffic entering the site will utilise the circulatory carriageway between the A27 Havant Bypass off-slips and the A2030 northbound exit. Traffic leaving the site will utilise the circulatory carriageway between the A2030 southbound approach and the A27 Havant Bypass on-slips.

8. MANAGEMENT OF CONSTRUCTION TRAFFIC

8.1.1.1. The applicant is awaiting further comments from HE following their review of the Framework Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2).

9. TRAFFIC FLOW IMPACTS

9.1. SRN JUNCTIONS ON THE A3(M) AND A27 HAVANT BYPASS WITHIN THE STUDY AREA

9.1.1.1. Within the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1), Section 1.10 details the methodology for the traffic assessment which was undertaken across the study area. Junction assessments were undertaken at the 22 locations identified within the Scoping Note contained within Appendix A of the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1). Further to this, an additional nine junctions were taken forward for further analysis on the basis that at least one approach experienced an increase in traffic flow of 10% or more and that the junction had a Volume over Capacity (V/C) ratio of over 100% in the one or both of the DS scenarios.

9.1.1.2. The only SRN junctions that met these criteria were A3(M) Junction 2 and A3(M) Junction 3. Capacity assessments for these two junctions are provided in paragraphs 1.12.4.1 and 1.12.4.7 of the TA (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1). The analysis within this demonstrated that these would operate within capacity during the DS scenarios and any extra queuing could be accommodated on the existing slip roads without compromising mainline flow on the carriageway.

9.2. M27 SMART MOTORWAY- JUNCTIONS 4-11

9.2.1.1. A 24km section of the M27 between Junction 4 with the M3 and Junction 11 at Fareham, is currently undergoing an upgrade into a smart motorway with all lane running capabilities. These infrastructure improvements involve converting the hard shoulder into a permanent running lane resulting in two four-lane carriageways.

9.2.1.2. Installation of the Onshore Cable Corridor is unlikely to affect the smart motorway works. It is proposed that the Onshore Cable Corridor would pass under the SRN (via Horizontal Directional Drilling) at the section of the A27 Havant Bypass next to Farlington Playing Fields and the grade separated roundabout interchange with the A2030 Eastern Road. This is approximately 10km east of Junction 11 and not within the scheme extents of the smart motorway works on the M27. Consequently, it is considered that the works would not impact on the smart motorway scheme and the effect of any temporary traffic redistribution would be limited. This is substantiated by the numbers in **Table 1** below, which illustrate that daily traffic flows owing to re-distribution are forecast to rise by 0.12%, equating to an additional 106 vehicles. This is projected to occur during the peak construction year (2022).

Table 1 – Comparison of SRTM forecasted traffic flows on M27 links nearest to the smart motorway works between the DM, DS1 and DS2 scenarios

Link Description	24hr AADT						
	Scenario			Absolute Change		Percentage Change	
	DM	DS1	DS2	DS1 vs DM	DS2 vs DM	DS1 vs DM	DS2 vs DM
M27 Westbound Carriageway – Link just after Junction 12 westbound on-slip from M275 Northern spur	88897	88702	88764	-195	-133	-0.22%	-0.15%
M27 Eastbound Carriageway – just before Junction 12 eastbound off-slip onto M275 Northern Spur to Cosham	86158	86263	86211	106	54	0.12%	0.06%

9.2.1.3. Indicative timescales provided by HE on the project website suggest that the scheme will be completed in 2021, however more specific information is not publicly available at present. The applicant would welcome further clarity on this matter as part of collaborative working efforts. Installation of the Onshore Cable Corridor is proposed to commence in Quarter 3 of 2021.

9.2.1.4. If the proposed scheme did commence whilst the smart motorway works were still taking place, the impacts would mainly be related to construction traffic routing to and from the Convertor Station and the site compound at Lovedean rather than the Onshore Cable Corridor This is because the construction traffic associated with the Onshore Cable Corridor will only be travelling along the A3(M) and the A27 Havant Bypass between the site compound in Lovedean and the extent of the order limit (as detailed in Section 3.4 of the Framework Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2).

9.2.1.5. Construction traffic would consist of the following daily vehicle movements: 86 HGV movements; and 412 construction worker car movements (assuming an occupancy rate of 1.0 per car to provide a robust analysis). These will all use the SRN but not necessarily the M27 as this will depend on the origin of suppliers, contractors and employees, with trips likely to be split between the M27 to the west, A27 to the east and A3 to the north. Crucially, these flows will be within the range of normal daily fluctuations in traffic flows that are currently experienced on the sections of the SRN within the study area. These construction traffic movements will also occur outside of the peak hours as outlined in Section 3.3.2 of the Framework Construction Traffic Management Plan (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2).

9.2.1.6. The majority of construction traffic associated with the Onshore Cable Corridor would only travel between the cable gangs and the site compound using the A3(M) and A27 Havant Bypass as required. The M27 would not be affected other than in relation to occasional material deliveries.

9.2.1.7. Once construction of smart motorways has been completed it is noted that these schemes have been proven to improve journey reliability by 22%. Given this, the extra capacity it is set to deliver plus the geographic distance away from the scheme, it is considered that network resilience will be not be significantly affected by the proposed works.

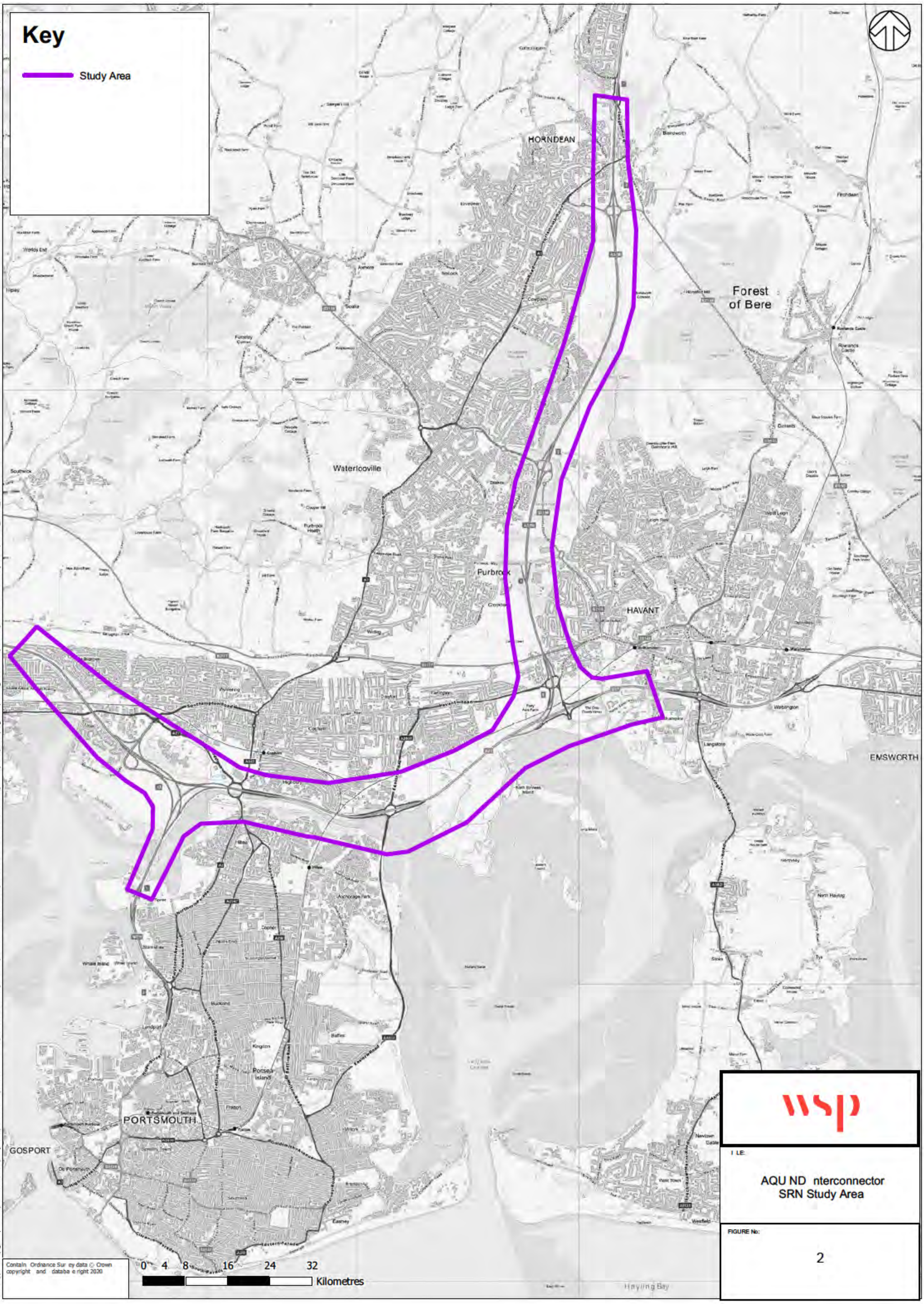
9.3. TRAFFIC REDISTRIBUTION ASSESSMENT

9.3.1.1. The impact of redistributing traffic due to the proposed scheme has been assessed across the sections of the strategic road network that fall within the study area. The corridor that has been assessed covers:

- The entire length of the A3(M) between Junctions 2 and 5;
- The section of the A27 Havant Bypass between the A3(M) and the M27;

- M27 Junction 12 Grade Separated Full Directional Triangle Interchange with the M275 link to Portsmouth; and
- M27 Junction 12 Grade Separated Trumpet Interchange with the M275 Northern Spur to Cosham.

9.3.1.2. The study area is illustrated in **Figure 2** below.

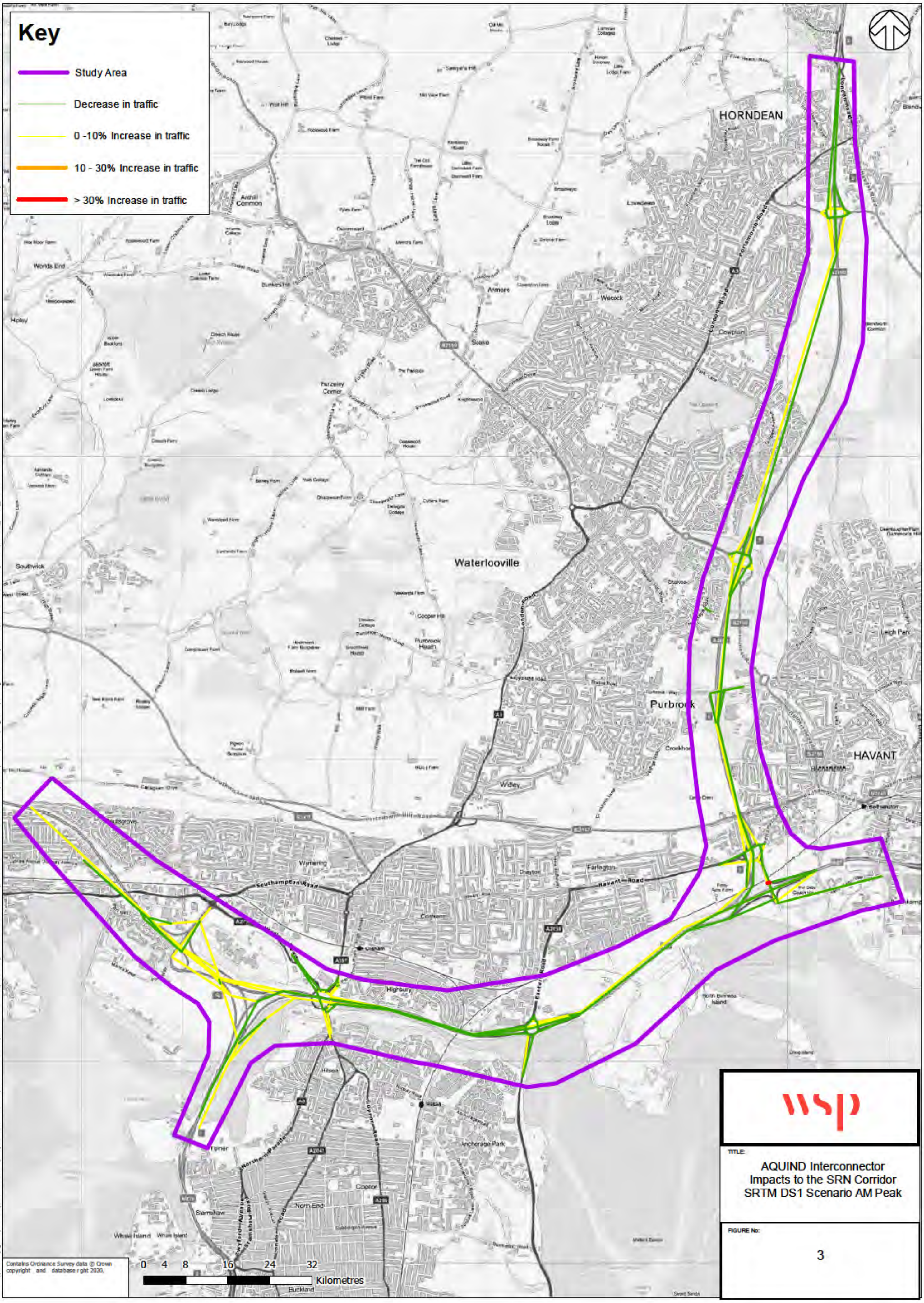


File: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DOO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Highways England Response\SRN Corridor Impacts\SRTM_SRN_IMPACTS.mxd Drawn By: UKDSP003 Date Modified: 10/03/2020

9.3.1.3. Analysis has been undertaken using outputs from the Solent Sub-Regional Transport Model (SRTM) as detailed within the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1). The SRTM run included data for three scenarios. These scenarios are as follows:

- Do Minimum (DM) – refers to a 2026 future year scenario with no AQUIND construction works in place;
- Do Something 1 (DS1) – refers to a 2026 future year scenario with AQUIND construction works in place including a southbound lane closure on the A2030 Eastern Road; and
- Do Something 2 (DS2) – refers to a 2026 future year scenario with AQUIND construction works in place including a northbound lane closure on the A2030 Eastern Road

9.3.1.4. In viewing the analysis of traffic flow changes within each DS scenario it should be noted that any increases in traffic flow emanating from traffic redistribution, will only be temporary in nature. The impacts of redistributing traffic across the study area for the AM and PM Peak periods in both the DS1 and DS2 scenarios, are illustrated in **Figures 3, 4, 5 and 6** below.



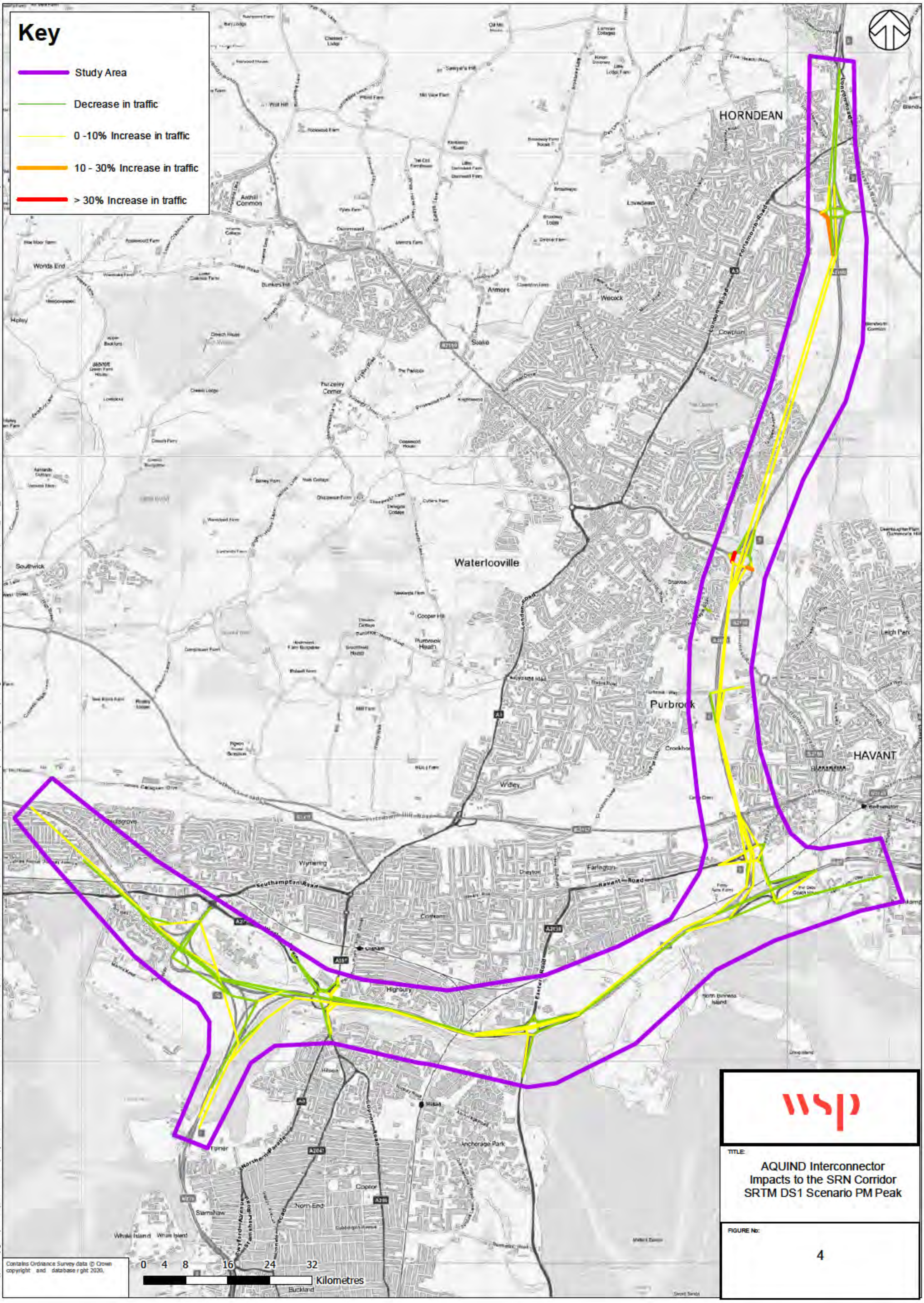
TITLE:

AQUIND Interconnector
Impacts to the SRN Corridor
SRTM DS1 Scenario AM Peak

FIGURE No:

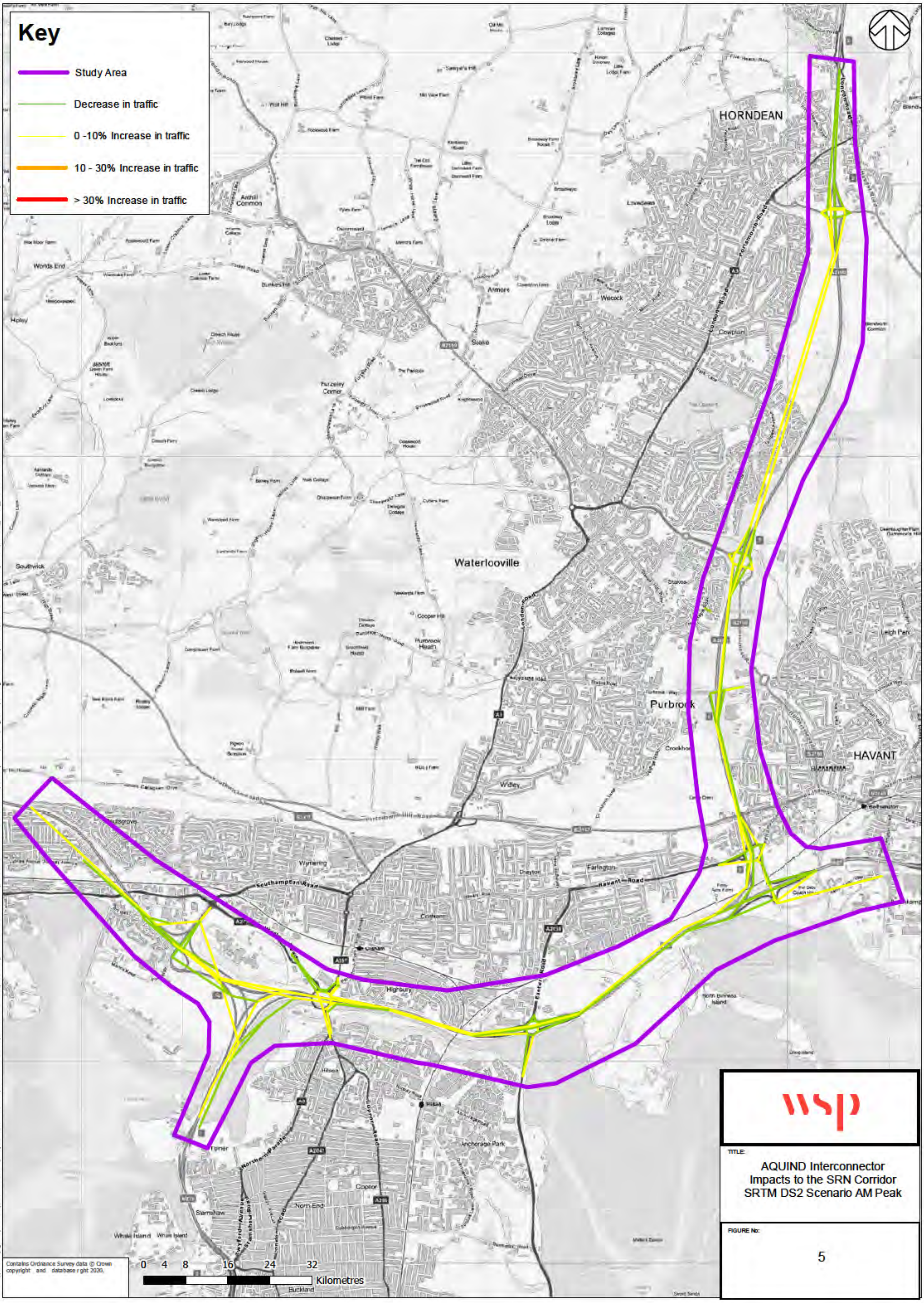
3

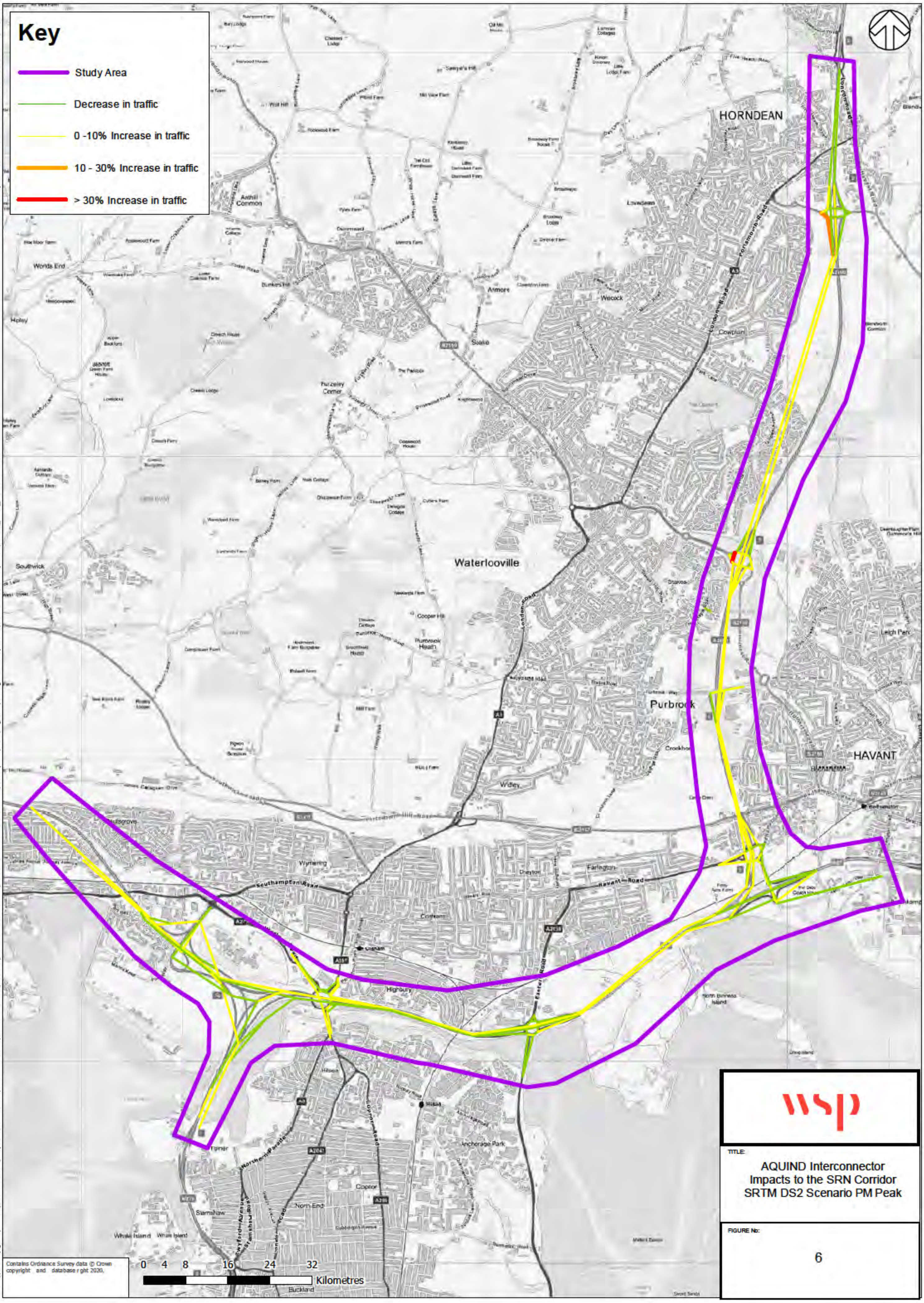
File: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Highways England Response\SRN Corridor Impacts\SRTM_SRN_IMPACTS.mxd Drawn By: UKDSP003 Date Modified: 06/03/2020



File: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Highways England Response\SRN Corridor Impacts\SRTM_SRN_IMPACTS.mxd Drawn By: UKDSP003 Date Modified: 06/03/2020

File: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Highways England Response\SRN Corridor Impacts\SRTM_SRN_IMPACTS.mxd Drawn By: UKDSP003 Date Modified: 06/03/2020





File: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Highways England Response\SRN Corridor Impacts\SRTM_SRN_IMPACTS.mxd Drawn By: UKDSP003 Date Modified: 06/03/2020

9.3.1.5. Overall these illustrate that for the majority of links across the study area, traffic flows either decrease or rise modestly by between 0 and 10%. These increases are not considered significant given the grade separated layout of the SRN roads and temporary nature of the

9.3.1.6. In a small number of isolated cases in the PM Peak for both DS1 and DS2, traffic flows are expected to increase by more than 10%. These increases involve the following junctions:

- A3(M) Junction 2;
- A3(M) Junction 3; and
- A3(M) Junction 4.

9.3.1.7. The A3(M) Junctions 2 and 3 were subject to capacity assessments in Section 1.12.4.1 of the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1). As discussed in paragraph 9.2.1.2, capacity assessments showed that the junctions would operate within capacity during the DS scenarios and any extra queuing could be accommodated on the existing slip roads without affecting the mainline flow of the A3(M).

9.3.1.8. The A3(M) Junction 4 was excluded from capacity assessments on the basis that the junction was shown to operate within capacity within the SRTM DS Scenarios, with all approaches forecast to have a Volume to Capacity Ratio of less than 100%. This approach was agreed with Hampshire County Council as local highway authority.

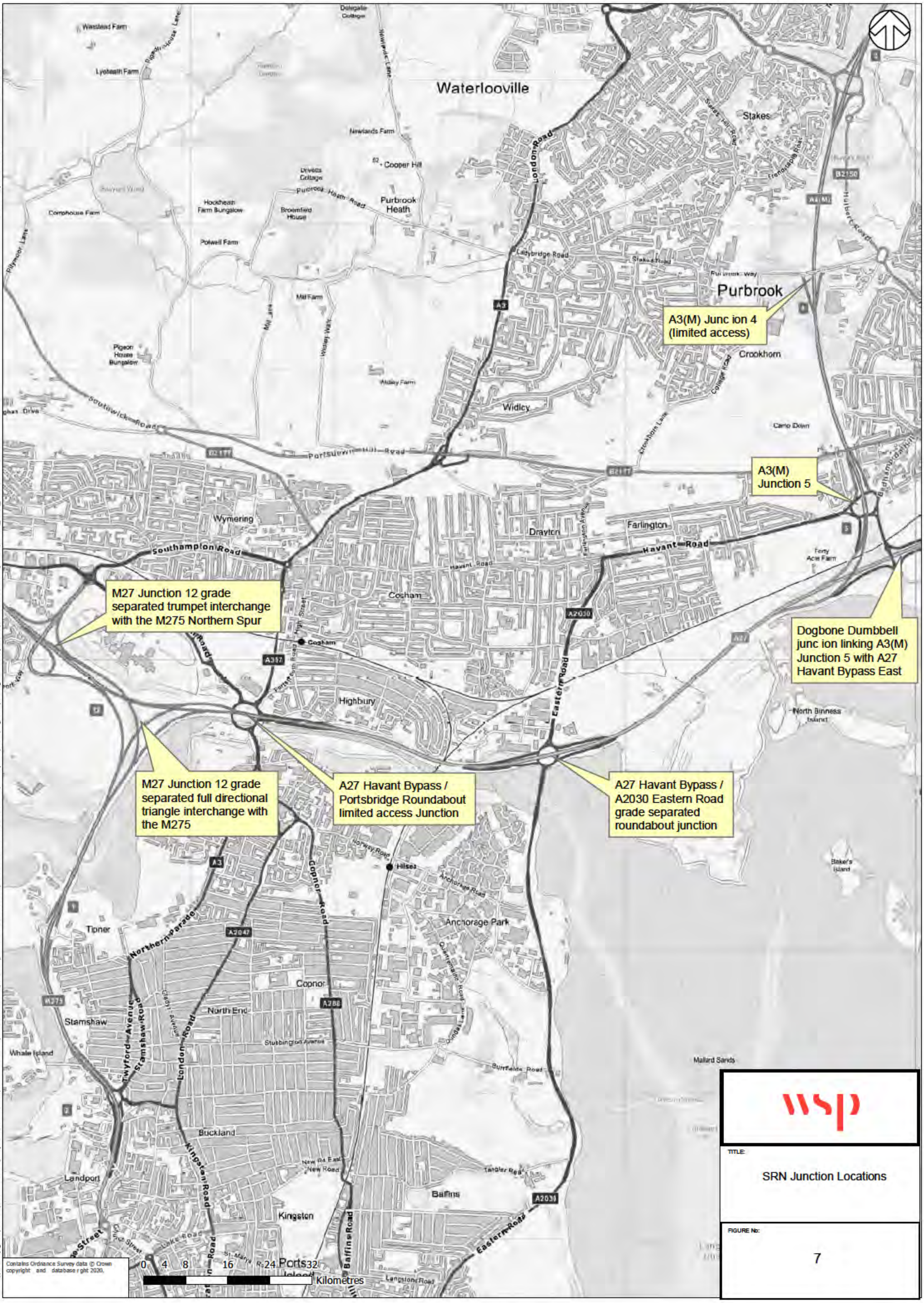
9.3.1.9. With regards to the following junctions, it was not considered necessary to undertake capacity assessments as the forecast changes in traffic flow were either negative or encompassed increases of less than 10%:

- A27 Havant Bypass / Portsbridge Roundabout Limited Access Junction;
- A27 Havant Bypass / A2030 Eastern Road Grade Separated Roundabout Junction; and
- A3(M) Junction 5.

9.3.1.10. The following junctions were excluded, as they were outside of the scope of assessment applied to the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1):

- M27 Junction 12 Grade Separated Trumpet Interchange with M275 Northern Spur to Cosham and A27 Southampton Road;
- M27 Junction 12 Grade Separated Full Directional Triangle Interchange with M275 to A3 Mile End Road and Portsmouth; and
- Dogbone Dumb-bell junction linking A3(M) Junction 5 with A27 Havant Bypass East (Limited Access).

9.3.1.11. Forecast changes in traffic flows for each of the 33 slip roads at the seven junctions listed above, are summarised in **Table 2** below. This includes changes for the AM and PM Peak Period across the DS1 and DS2 scenarios. A plan showing the locations of the seven junctions is provided in **Figure 7** below.



File: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Highways England Response\SRN Corridor Impacts\SRTM_SRN_IMPACTS.mxd Drawn By: UKDSP003 Date Modified: 06/03/2020

Table 2 - Comparison of SRTM forecasted traffic flows on the SRN between the DM, DS1 and DS2 scenarios

Junction	Slip Road	LINK_ID	AADT (all vehicles)													
			AM Peak							PM Peak						
			Scenario			Absolute change		Percentage Change		Scenario			Absolute change		Percentage Change	
			DM	DS1	DS2	DS1 vs DM	DS2 Vs DM	DS1 vs DM	DS2 vs DM	DM	DS1	DS2	DS1 vs DM	DS2 vs DM	DS1 vs DM	DS2 vs DM
M27 Junction 12 grade separated trumpet interchange with the M275 Northern Spur to A27 Southampton Road and Cosham	East to North off-slip (onto M275 Northern Spur from M27 eastbound)	57743_57735	5247	5285	5315	37	67	0.7%	1.3%	3812	3813	3818	2	6	0.05%	0.2%
	North to West on-slip (onto M27 westbound from M275 Northern Spur)	57735_58736	4642	4621	4580	-21	-62	-0.5%	-1.3%	4838	4836	4854	-2	16	-0.05%	0.2%
	North to South on-slip (from M275 Northern Spur to M275 southbound towards Portsmouth)	57735_57736	1439	1530	1495	91	56	6.3%	3.9%	2428	2523	2483	95	56	3.9%	2.3%
	South to North off-slip (from M275 northbound onto M275 Northern Spur towards Cosham)	58739_58735	1513	1525	1471	12	-42	0.8%	-2.8%	1977	1963	1940	-13	-36	-0.7%	-1.8%
	TOTAL FOR JUNCTION	N.A.	12842	12961	12861	118	19	0.9%	0.1%	13054	13136	13095	82	41	0.6%	0.3%
M27 Junction 12 grade separated full directional triangle interchange with the M275 to A3 Mile End Road and Portsmouth	West to south off-slip (from M27 eastbound onto M275 southbound towards Portsmouth)	57734_57736	4866	4889	4830	23	-36	0.5%	-0.7%	6373	6444	6350	71	-23	1.1%	-0.4%
	South to west on-slip (from M275 northbound onto M27 westbound)	58739_58744	5519	5521	5505	3	-14	0.05%	-0.2%	6503	6502	6493	-1	-10	-0.02%	-0.2%
	South to east on-slip (from M275 northbound onto M27 eastbound)	58740_57832	5343	5280	5426	-63	83	-1.2%	1.6%	5111	5126	5157	15	46	0.3%	0.9%
	East to south off-slip (from M27 westbound onto M275 southbound towards Portsmouth)	58231_58242	3798	3806	3768	8	-30	0.2%	-0.8%	3056	3291	3030	235	-26	7.7%	-0.9%
	TOTAL FOR JUNCTION	N.A.	19526	19497	19530	-29	4	-0.1%	0.0%	21044	21362	21030	319	-13	1.5%	-0.1%
A27 Havant Bypass / Portsbridge Roundabout Limited Access Junction	A27 Western Road approach	57521_57846	3161	3109	3112	-52	-49	-1.6%	-1.5%	4365	4357	4346	-8	-19	-0.2%	-0.4%
	A397 Northern Road approach	57840_57836	3654	3738	3669	84	16	2.3%	0.4%	4065	4211	4175	145	110	3.6%	2.7%
	Eastbound on-slip	57838_57852	2655	2700	2656	46	1	1.7%	0.0%	2493	2479	2501	-14	8	-0.6%	0.3%
	Westbound off-slip	58237_58244	2977	2952	2964	-25	-13	-0.9%	-0.4%	3882	3906	3862	24	-20	0.6%	-0.5%
	A3 London Road approach	58235_58232	5180	5190	5184	10	4	0.2%	0.1%	5443	5370	5465	-73	22	-1.3%	0.4%
	TOTAL FOR JUNCTION	N.A.	17626	17688	17585	62	-41	0.4%	-0.2%	20247	20322	20349	75	101	0.4%	0.5%

A27 Havant Bypass / A2030 Eastern Road Grade Separated Roundabout Junction	A2030 southbound approach	56137_56113	3230	3106	3195	-124	-35	-3.8%	-1.1%	4419	4118	4278	-301	-141	-6.8%	-3.2%
	Eastbound on-slip	56139_56146	4006	4065	3925	59	-80	1.5%	-2.0%	4651	4608	4542	-44	-109	-0.9%	-2.3%
	Westbound off-slip	56140_56114	4332	4279	4300	-53	-32	-1.2%	-0.7%	4154	3920	4208	-234	53	-5.6%	1.3%
	A2030 northbound approach	55335_56112	5127	5139	5013	12	-114	0.2%	-2.2%	5861	5862	5750	2	-111	0.0%	-1.9%
	Westbound on-slip	56133_56131	1532	1523	1596	-9	64	-0.6%	4.2%	2306	2312	2258	6	-48	0.2%	-2.1%
	Eastbound off-slip	56158_56111	2904	2862	2879	-42	-26	-1.4%	-0.9%	2633	2452	2537	-181	-96	-6.9%	-3.6%
	TOTAL FOR JUNCTION	N.A.	21131	20975	20909	-156	-222	-0.7%	-1.1%	24024	23272	23573	-752	-451	-3.1%	-1.9%
A3(M) Junction 4 (Limited Access)	Northbound off-slip	64636_64621	1594	1568	1570	-26	-24	-1.6%	-1.5%	3557	3163	3136	-393	-421	-11.1%	-11.8%
	Purbrook Way eastbound approach	64335_64621	3426	3401	3380	-24	-46	-0.7%	-1.3%	2194	2481	2509	287	315	13.1%	14.3%
	Purbrook Way westbound approach	60021_60027	2516	2451	2465	-65	-51	-2.6%	-2.0%	2563	2720	2712	156	148	6.1%	5.8%
	Southbound on-slip	60021_64635	3454	3448	3429	-6	-25	-0.2%	-0.7%	2634	2705	2737	71	103	2.7%	3.9%
	TOTAL FOR JUNCTION	N.A.	10990	10869	10844	-121	-146	-1.1%	-1.3%	10947	11069	11093	121	145	1.1%	1.3%
A3(M) Junction 5*	Northbound off-slip	59839_59841	902	874	861	-28	-42	-3.1%	-4.6%	1371	1321	1333	-50	-38	-3.6%	-2.8%
	A2030 Havant Road approach	59834_59837	2389	2375	2379	-14	-11	-0.6%	-0.4%	2574	2623	2613	49	39	1.9%	1.5%
	Northbound on-slip	59838_59853	3220	3331	3331	111	111	3.4%	3.5%	4171	4252	4252	81	81	1.9%	1.9%
	Southbound off-slip	59836_59933	3372	3375	3376	3	4	0.1%	0.1%	3691	3721	3720	30	29	0.8%	0.8%
	B2177 Bedhampton Hill approach	59938_59936	1611	1672	1689	61	78	3.8%	4.8%	1548	1511	1507	-37	-41	-2.4%	-2.6%
	Total for junction	N.A.	11494	11627	11635	132	141	1.2%	1.2%	13355	13428	13424	73	69	0.5%	0.5%
Dogbone Dumbbell junction linking A3(M) Junction 5 with A27 Havant Bypass East**	A27 southbound approach	59830_59822	4425	4320	4321	-104	-103	-2.4%	-2.3%	4306	4176	4168	-130	-138	-3.0%	-3.2%
	Eastbound on-slip	59822_59847	1918	1875	1878	-43	-40	-2.2%	-2.1%	2434	2415	2413	-19	-21	-0.8%	0.9%
	Westbound off-slip	59847_59811	2300	2305	2304	5	4	0.2%	0.2%	2913	3113	3060	200	147	6.9%	5.0%
	Harts Farm Way approach	60421_59846	1262	1264	1265	1	3	0.1%	0.2%	1376	1316	1336	-60	-40	-4.4%	-2.9%
	Westbound on-slip	59845_59835	1603	1602	1601	-1	-1	-0.05%	-0.1%	1185	1179	1168	-6	-16	-0.5%	-1.4%
	TOTAL FOR JUNCTION	N.A.	11508	11366	11370	-142	-138	-1.2%	-1.2%	12214	12199	12145	-15	-68	-0.1%	-0.6%

*Note there is no southbound on-slip. Instead there is a westbound on-slip at the dumb-bell junction linking the A3(M) Junction 5 with the A27 Havant Bypass East.

**Note there is no westbound on-slip. Instead there is a northbound on-slip at the A3(M) Junction 5.

9.3.1.12. As shown in **Table 2**, the majority of slip roads are forecast to experience a reduction in traffic or an increase in traffic of less than 2%. This is not considered significant.

During the AM Peak:

- Three slip-roads are forecast to see a rise in traffic of more than 2% but less than 10% across the two DS scenarios;
- Two slip-roads are forecast to experience an increase in traffic of more than 2% on one of the DS scenarios;
- Six slip-roads are predicted to be subject to an increase in traffic flow of less than 2% in both DS scenarios;
- 15 slip-roads are projected to experience a decrease in traffic across the two DS scenarios; and
- Seven slip roads are anticipated to see a decrease in traffic flows in one of the DS scenarios.

During the PM Peak:

- Six slip-roads are forecast to see a rise in traffic of more than 2% across the two DS scenarios;
- One slip-road is predicted to experience a rise in traffic of more than 2% in one of the DS scenarios;
- Five slip roads are estimated to see an increase in traffic flows of less than 2% in both DS scenarios;
- 13 slip roads are anticipated to be subject to a decrease in traffic across both DS scenarios; and
- Eight slip roads are projected to experience a decrease in traffic in one of the DS scenarios.

9.3.1.13. With regards to total flows there is a decrease in both DS scenarios across the AM and PM peaks or flows remain largely static (less than 1% rise) at the following four junctions:

- M27 Junction 12 grade separated trumpet interchange with the M275 Northern Spur to A27 Southampton Road and Cosham;
- A27 Havant Bypass / Portsbridge Roundabout Limited Access Junction;
- A27 Havant Bypass / A2030 Eastern Road Grade Separated Roundabout Junction; and
- Dogbone Dumb-bell junction linking A3(M) Junction 5 with A27 Havant Bypass East (Limited Access).

9.3.1.14. At the M27 Junction 12 Grade Separated Full Directional Triangle Interchange with the M275 to A3 Mile End Road and Portsmouth, total flows are largely static with the exception of the DS1 PM scenario where there is an increase of 1.5%,

9.3.1.15. Conversely at the A3(M) Junction 4 (Limited Access), traffic flows are projected to decrease in the AM Peak and rise by just over 1% in the PM Peak.

9.3.1.16. Finally, for the A3(M) Junction 5, total flows are forecast to rise by a maximum of 1.2%.

9.3.1.17. A summary for each of the seven junctions is provided below.

9.4. M27 JUNCTION 12 GRADE SEPARATED TRUMPET INTERCHANGE WITH M275 NORTHERN SPUR TO A27 SOUTHAMPTON ROAD AND COSHAM

9.4.1.1. The largest proportional increases in traffic at this junction are forecast on the North to South on-slip (from M275 Northern Spur to M275 southbound towards Portsmouth). The rise is most pronounced in the AM peak DS1 scenario, standing at 6.3%, which equates to an additional two vehicles (rounded up) per minute. Given the higher levels of capacity and reduced conflict points associated with a grade-separated interchange, such an increase is not considered significant.

9.4.1.2. The remaining slip-roads at this junction either experience a decrease in traffic or a rise in traffic of less than 2%.

9.5. M27 JUNCTION 12 GRADE SEPARATED FULL DIRECTIONAL TRIANGLE INTERCHANGE WITH M275 TO A3 MILE END ROAD AND PORTSMOUTH

9.5.1.1. The greatest proportional increase in traffic at this junction (7.7%) is projected in the PM peak on the East to south off-slip (from M27 westbound onto M275 southbound towards Portsmouth). This represents an extra four vehicles (rounded up) per minute. Given the higher levels of capacity and reduced conflict points associated with a grade-separated interchange, such an increase is not considered significant.

9.5.1.2. The remaining slip-roads at this junction either experience a decrease in traffic or a rise in traffic of less than 2%.

9.6. A27 HAVANT BYPASS / PORTSBRIDGE ROUNDABOUT LIMITED ACCESS JUNCTION

9.6.1.1. At this junction, there is mainly a decrease or negligible increase in traffic on the slip-roads across the assessed scenarios. The slip road with the largest forecasted traffic flow rise is the eastbound on-slip during the AM peak in the DS1 scenario, where flows are set to rise by 1.7%. Approximately, this correlates to one additional vehicle entering the mainline carriageway every minute. This is not considered significant.

9.6.1.2. The worst-case approach is the A397 Northern Road approach. During the PM peak flows are expected to be between 2.7-3.6% higher, equating to an additional two vehicles entering the junction per minute. This is not considered significant. A27 Havant Bypass / A2030 Eastern Road Grade Separated Roundabout Junction

9.7. A27 HAVANT BYPASS / A2030 EASTERN ROAD GRADE SEPARATED ROUNDABOUT JUNCTION

9.7.1.1. Generally, the off-slips at this junction experience a decrease in traffic between the DM and DS scenarios, although the westbound off-slip shows an increase of 1.3% in the DS2 PM peak. This however is offset by the reduction in traffic on the Eastern Road approaches as vehicles redistribute away from traffic management south of the junction. The westbound on-slip during the DS1 AM Peak experiences an increase of 4.2% which approximately equates to an additional vehicle per minute but this is not considered significant.

9.7.1.2. Overall the junction experiences a decrease in traffic in each DS scenario when compared against the DM. As such no further detailed capacity assessment was undertaken at this junction as part of Appendix 22.1 Transport Assessment (Document reference 6.3.22.1).

9.8. A3(M) JUNCTION 4 (LIMITED ACCESS)

9.8.1.1. In the AM peak for both DS scenarios, all slip roads are forecast to experience a decrease in traffic flows. Likewise, in the PM Peak, the northbound off-slip is projected to see a decrease in traffic flows of around 11%. However, the southbound on-slip is expected to experience a rise of between 2.7-3.9% of vehicles during the PM peak. This would equate to around an extra two vehicles per minute (rounded up) entering the mainline carriageway. This is not considered significant.

9.8.1.2. Both Purbrook Way approaches are forecast to rise by more than 5% during the PM peak scenarios. This is most pronounced on the Purbrook Way eastbound approach where traffic is set to rise by between 13.1-14.3%. However, as outlined in **Table 2**, the majority of this (65% in the worst-case) continues along Purbrook Way and does not head onto the SRN via the southbound on-slip. Moreover, the northbound off-slip has priority over Purbrook Way at the roundabout junction and experiences a decrease in traffic of approximately 400 vehicles in the DS PM scenarios as traffic diverts onto other routes. Overall this junction also experiences a decrease in traffic in the DS scenarios. Because of these factors, these traffic flow increases are not considered significant.

9.9. A3(M) JUNCTION 5

9.9.1.1. The northbound off-slip is forecast to experience a reduction in traffic flows in all scenarios. Alternatively, the southbound off-slip is predicted to see a rise in traffic of less than 1% in all scenarios. The largest proportional increase (3.5%) is set to transpire on the northbound on-slip during the AM Peak for both DS scenarios. This represents an extra two vehicles (rounded up) entering the mainline carriageway every minute. This is not considered significant. As demonstrated in **Table 2,** over 50% of the increase on the northbound on-slip emanates from the B2177 Bedhampton Road approach where traffic flows are projected to rise by between 3.8-4.8%. This equates to approximately 1 extra vehicle entering the junction at this approach every minute. This is not considered significant.

9.10. DOGBONE DUMBELL JUNCTION LINKING A3(M) JUNCTION 5 WITH A27 HAVANT BYPASS EAST (LIMITED ACCESS)

9.10.1.1. Two of the three slip roads are projected to experience a fall in traffic flows. Conversely on the westbound off-slip, an increase of at least 2% is anticipated across the two peak periods for both of the DS Scenarios. This is most pronounced in the PM Peak with a projected rise of 6.9% in the DS1 scenario, equating to an additional four vehicles (rounded up) leaving the mainline carriageway per minute.

9.10.1.2. The slip road is provided with two lanes and is approximately 370m long. This is a conservative measurement and does not include the length of the chevron markings at the exit nose which is circa 85m long just after the exit taper. Both the nearside and offside lanes allow vehicles to leave at the third exit onto the A27 (N) towards Bedhampton. This is where the projected traffic flow rise is expected to head towards as shown in **Figures 5, 6 and 7**. Furthermore, on the approach to the roundabout, there is a lane gain on the nearside which is allocated for traffic leaving at the first exit onto Harts Farm Way. This is approximately 40m long.

9.10.1.3. Based on the slip-road length, number of lanes, lane allocation and a PCU length of 6 metres, this off-slip has the capacity to store at least 123 PCUs without obstructing the mainline carriageway on the A27 Havant Bypass. Therefore, the impact of traffic redistribution to this off-slip is not considered significant as it is unlikely to result in any queuing back onto the mainline other than what normally transpires.

9.11. SUMMARY

9.11.1.1. The majority of slip roads and approaches connecting to the SRN, across the seven assessed junctions listed above are forecast to experience a reduction in traffic or an increase in traffic of less than 2%. Such increases are not considered significant and therefore are not expected to impact on the operational capacities of these junctions.

9.11.1.2. Crucially, it should be emphasised that the works will be temporary in nature and that the assessed scenarios are an indication of a worst-case scenario (when the most disruptive traffic management is in place simultaneously) so as to provide a robust assessment. Measures contained within the Framework Traffic Management Strategy (APP-450: 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2), will ensure that such a situation will not arise, meaning that the cumulative impact of redistributing traffic will be less than what has been forecast. For example, the SRTM includes the cumulative impact of traffic management being installed at the A3 London Road / Ladybridge Road roundabout in Purbrook and the B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue Roundabout in Waterlooville. This impacts a significant volume of trips made between Denmead / Waterlooville and Purbrook, Cosham and northern areas of Portsmouth and leads to traffic distributing to and from the A3(M) and A27 via junctions 2, 3 and 4. The FTMS programme however will prohibit this situation from occurring by limiting where works can be completed simultaneously along the B2150 Hambledon Road and A3 London Road and will therefore lead to a lower level of traffic redistribution than assessed within the Transport Assessment.

9.11.1.3. Looking at the seven junctions as a whole, most are predicted to experience a reduction in traffic flows (through redistribution of traffic). Those that do not experience a decrease in traffic flows either remain largely static or experience small rises (less than 2%). Such increases occur on grade separated junctions or at junctions nearest to the traffic management.

9.11.1.4. Overall the effect of traffic redistribution from the outputs of the SRTM forecasts does not appear to be concentrated on the SRN and seems to be fairly dispersed across the network reflecting the diversity of highway infrastructure, trip patterns and the factors affecting travel choices.

9.12. JUNCTION CAPACITY MODELS FOR A2030 EASTERN ROAD / WALTON ROAD SIGNAL CONTROLLED JUNCTION AND A2030 EASTERN ROAD / FARLINGTON PLAYING FIELDS ACCESS JUNCTION

9.12.1.1. Junction Capacity Models were not provided for these junctions for three reasons:

- Firstly, as part of the analysis undertaken for the Transport Assessment (APP-448: 6.3.22.1 Environmental Statement - Volume 3 - Appendix 22.1), none of the approaches at these junctions are forecast to experience an increase in traffic of 10% or more and neither of these junctions have a V/C of over 100% in one or both of the DS scenarios.

- Secondly, as discussed in Section 7.3 of this Technical Note, the number of construction vehicles accessing Farlington Playing Fields is anticipated to be low (generally 1-2 per hour) and HGV construction traffic will occur outside of the peak periods.
- Thirdly, as shown in **Table 3** below, flows along the A2030 Eastern Road to and from the roundabout with the A27 Havant Bypass are forecast to decrease in all scenarios.

9.12.1.2. Therefore, no additional assessments are considered necessary.

Table 3 - Flows along the A2030 Eastern Road (N) to and from the roundabout with the A27 Havant Bypass

Link Description	AADT (all vehicles)													
	AM Peak							PM Peak						
	Scenario			Absolute change		Percentage Change		Scenario			Absolute change		Percentage Change	
	DM	DS1	DS2	DS1 vs DM	DS2 Vs DM	DS1 vs DM	DS2 vs DM	DM	DS1	DS2	DS1 vs DM	DS2 vs DM	DS1 vs DM	DS2 vs DM
A2030 Eastern Road northbound exit from A27 Havant Bypass roundabout	4501	4454	4410	-47	-91	-1.1%	-2.0%	4395	4344	4357	-51	-38	-1.2%	-0.9%
A2030 Eastern Road southbound approach to A27 Havant Bypass roundabout	3230	3106	3195	-124	-35	-3.8%	-1.1%	4419	4118	4278	-301	-141	-6.8%	-3.2%

10. DURATION OF WORKS

10.1.1.1. This section clarifies the intended duration of individual location-specific elements of the work.

10.1.1.2. The duration of the six HDD sites are detailed in Table 3.6 of the Description of the Proposed Development (APP-118: 6.1.3 Environmental Statement - Volume 1 - Chapter 3). For ease of reference, a copy of this has been provided below in **Table 4**.

Table 4 - HDD Durations

Trenchless Crossing Area	Duration for single operation
HDD-1 Landfall	44 weeks (60 weeks including Transition Joint Bays)
HDD-2 Eastney and Milton Allotments	12 weeks
HDD-3 Langstone Harbour	31 weeks
HDD-4 Farlington Railway Crossing	26 weeks
HDD-5 Kings Pond	13 weeks
HDD-6 Milton Common	2 weeks

10.1.1.3. An indicative programme for the construction works associated with the onshore elements of the Proposed Development is provided in Table 3.9 of the Description of the Proposed Development (6.1.3 Environmental Statement - Volume 1 - Chapter 3). For ease of reference, a copy of this has been provided in **Table 5** below.

10.1.1.4. It should be noted that the peak construction year is projected to transpire in 2022. This is when the maximum number of construction vehicles and the forecasted traffic redistribution discussed earlier will occur on the SRN.

Table 5 - Indicative onshore construction programme

Activity	Indicative Programme

Converter Station Construction	Q3 2021 – Q1 2024
Onshore HVDC Route Construction/ Cable Installation	Q3 2021 – Q4 2023
HDD and Landfall Construction (Onshore)	Q3 2021 – Q4 2023
Converter Station Commissioning	Q4 2023 – Q2 2024

10.1.1.5. Further information regarding the indicative onshore construction programme is provided in Appendix 3.8 Onshore and Marine Programme (Environmental Statement Document APP-362). For ease of reference, a copy of the pertinent information is provided in **Table 6** below. Quarterly timescales have been specified so as to allow for a more flexible approach to cable installation and to accommodate some disruption should it arise.

10.1.1.6. Within **Table 6**, the orange bars represent tasks, whilst the green bars represent the individual activities within those tasks. These are current estimates for the sequencing of activities. However, in order to maintain flexibility in the construction programme, these individual activities may occur at other times during the period allocated to the overall summary task, although sequencing is likely to remain similar.

Table 6 – Indicative worst-case Onshore cable installation and Convertor Station Construction Programme

Key Task	Related Activities	2021		2022				2023				2024			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Onshore Cable Installation (UK)	All activities														
	Route construction														
	Cable Pulling														
	Jointing and terminating														
Convertor Station Construction	All activities including reinstatement														
	Enabling / Diversion Works														
	Main Civils Construction works														
	Mechanical and Electrical Work														

REFERENCES

There are no sources in the current document.

Appendix 1 – Appendix 22.3 Consultation Responses (Environmental Statement Document App-451)

AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Volume 3 – Appendix 22.3 Consultation Responses

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Document Ref: 6.3.22.2

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Volume 3 – Appendix 22.3 Consultation Responses

PINS REF.: EN020022

DOCUMENT: 6.3.22.2

DATE: 14 NOVEMBER 2019

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	6.3.22.3 Environmental Statement – Volume 3 – Appendix 22.3 Consultation Responses
Revision	001
Document Owner	WSP UK Limited
Prepared By	S Gander
Date	14 November 2019
Approved By	C Williams
Date	14 November 2019

CONTENTS

APPENDIX 22.3 CONSULTATION RESPONSES

1.1. PRE- PIER CONSULTATION

1.1.1.1. This section outlines the responses received from statutory consultees before the publication of the PEIR.

Consultee	Date and Method of Consultation	Discussion	Summary of Outcome of Discussions
Hampshire County Council	Written response 26 March 2018	Further information required regarding cable laying proposals, carriageway widths and appropriateness of routes.	Details of construction methodology are included in Chapter 3 - Description of the Proposed Development. An assessment of the Onshore Cable Corridor has been included within Chapter 21 of the EIA.
		Consideration should be given to the committed development in the area, ensuring baseline conditions are accurate.	All traffic modelling has been undertaken using the SRTM and a future year of 2026. This includes all consented and local plan development within the study area.
		A Transport Assessment or Transport Statement will be required.	This has been undertaken to support the DCO submission.

1.2. POST PIER CONSULTATION

1.2.1.1. This section outlines the responses received from statutory consultees following the publication of the PEIR. These responses have been considered within the EIA.

1.2.2. BUCKLAND DEVELOPMENT LTD

Discussion	Summary of Outcome of Discussions
Construction programme should not prejudice development of Land North of Highbank Avenue. This will be accessed from the A3 London Road opposite Downside Road.	Traffic management proposals along A3 London Road will not prejudice development. Details of side-road / business access proposals are included within the FTMS.

1.2.3. DENMEAD PARISH COUNCIL

Discussion	Summary of Outcome of Discussions
Construction traffic should use the A3(M) rather than local roads.	Construction traffic will use the A3 (M) to access the local road network as prescribed within the CTMP.
The site will create additional traffic purely by being there.	Once operational the convertor station will generate very low volumes of traffic for maintenance purposes only.
Why can't the A3(M) form part of the Onshore Cable Corridor?	Use of the A3(M) is not possible without agreement from Highways England. Traffic Management requirements on such roads (lane closures) would lead to significant disruption to the Strategic Road Network, with knock-on repercussions to the local road network as a result of traffic redistribution.
Concerns regarding access to residential properties.	Access to residential properties will be maintained where possible but some vehicular restrictions will be required when cable installation is underway immediately outside an access. This will impact individual properties for a maximum of 1-2 weeks per circuit, during which time pedestrian and cycle access will be retained at all times.

Discussion	Summary of Outcome of Discussions
Forest Road / Hambledon Road is a 'rat run' for commuter traffic	Impacts on Hambledon Road and Forest Road have been fully assessed within the TA.
Concerns regarding landscape and visual impacts at Converter Station	The Applicant has met with WCC, EHDC and SDNPA on several occasions since the Statutory Consultation to discuss Converter Station design and landscaping. This has culminated in a set of Design Principles and Landscape Principles being drafted upon which the detailed design and landscaping mitigation will be based. Details of the discussions and principles are set out in the Design and Access Statement ("DAS").

1.2.4. EAST HAMPSHIRE DISTRICT COUNCIL

Discussion	Summary of Outcome of Discussions
It is questioned whether a 'negligible' impact is a reasonable reflection of the impact of a 25% increase in traffic on Lovedean Lane (albeit this is during peak construction). Lovedean Lane is a predominantly residential road and Day Lane is a rural lane with a width unable to accommodate two-way HGV flow. The impact of the additional traffic during construction is considered to be significant and under played by the PEIR.	Impact is based upon PEIR assessment criteria. Further assessment has been completed within the EIA and associated Transport Assessment.
The Construction Traffic Management Plan should include details of the Converter Station access arrangements and the timing of deliveries / contractors to avoid a situation of vehicles arriving early and being parked on local roads. EHDC would like to maintain dialogue with AQUIND as these documents evolve.	CTMP provides detailed as required.

1.2.5. GRAINGER

Discussion	Summary of Outcome of Discussions
The Red Line Boundary should fall outside of all Grainger Land so as not to prejudice the delivery of future development at the West of Waterlooville MDA (Berewood) and Blue Star Land, which is allocated for residential development under the Havant Local Plan.	The final Order Limit does not include Grainger land.
Construction programme / works should not disrupt proposals for Ladybridge roundabout, due to commence in Spring 2020 and be fully constructed by November / December 2020.	This will be fully considered as part of the construction programme once a contractor has been appointed.

1.2.6. HAMPSHIRE COUNTY COUNCIL

Discussion	Summary of Outcome of Discussions
Impact on A3 London Road needs to be quantified	Impact on A3 London Road is fully assessed within the TA.
Details of the Converter Station Access are required	Site access options have been submitted to HCC for review. The proposals are also included within the TA.
Confirmation on proposed delivery mechanism for cables across Anmore Road and site access into Kings Pond Meadow is required	Details will be included within the PD. The cables will be installed via trenching. Access to Kings Pond Meadow will necessitate works to the existing farm access west of Soake Road.
Section 4 – Need to subdivide to account for this sections' length and varying highway characteristics	Section 4 has been subdivided accordingly in the FTMS which details the proposed traffic management for each sub-section.
The impact of the opportunity to take the Onshore Cable Corridor away from the A3 London Road onto parallel service roads / minor residential roads (such as Hambledon Parade) have not been fully considered.	Full details of traffic management proposals for parallel service roads / minor residential roads (including Hambledon Parade) are included within the Traffic Management Strategy.
Opportunities for avoiding the A3 London Road by utilising the West of Waterlooville MDA site have not been included.	The Applicant has worked with Grainger to discuss this option, ultimately Grainger consider the risks to their programme delivery would be unacceptable to allow the Applicant to utilise its land.

Discussion	Summary of Outcome of Discussions
Bus lane and bus stop closures along the A3 star corridor are considered to have a significant impact on bus journey times / reliability. Mitigation may be required such a direct funding of additional services to avoid undermining efforts of the Transforming Cities Fund (TCF).	AQUIND has met First Group who do not consider the works of particular concern compared to other undertakers works. Mitigation will be provided where possible through the implementation of bus priority as part of the traffic management proposals. Where temporary bus stop closures are required an alternative stop will be provided where possible. TCF bids do not yet constitute committed schemes and therefore cannot be considered in the design of the cable route.
The acceptability of installing cables at the roundabout with Ladybridge Road must be considered in the context of other projects.	The final Order Limit has taken account of the proposals for Ladybridge Roundabout
Disagree with use of general travel pattern data in the construction phase methodology. Measures should be used to actively reduce single occupancy car trips.	All construction traffic associated with the construction of the Convertor Station will use the designated construction traffic access route included within the CTMP. A Construction Worker Travel Plan has been developed and is included within the CTMP.
Insufficient analysis of the suitability of the access route to the Convertor Station has been undertaken. Specifically, there are concerns regarding the ability of Lovedean Lane to accommodate two-way HGV traffic given its predominately residential nature.	A full assessment has been included within the CTMP.

Discussion	Summary of Outcome of Discussions
Traffic data analysis is required to confirm the peak periods especially outside schools and sensitive receptors to help clarify the restrictions that should be applied to HGV movements.	Traffic modelling has been completed using the SRTM based on standard AM and PM peak periods. CTMP includes details of construction traffic restrictions.
The construction traffic access route for the Convertor Station has implications for asset resilience. Elements of the route are unlikely to be of a standard to accommodate the anticipated vehicle loading levels. The applicant must examine this matter further and provide suitable mitigation measures to ensure that: • **HCC is not left with a maintenance burden and;** • **The highway remains in a safe operational condition both during and beyond the construction period.**	This has been addressed within the CTMP.
AQUIND should take account of the planned works on Lovedean Lane to install a pedestrian island.	Temporary removal may be required to allow access by abnormal loads.
Details of the Internal Road Route should be provided to HCC to ensure it is suitable for construction traffic.	Details included within the PD.
A CTMP should be produced that considers the following aspects: • **Mud;** • **Turning of delivery vehicles;** • **Contractors vehicle parking;** • **Suitability of routes to the site; and** • **Mitigation measures.**	Details are included within the CTMP.

Discussion	Summary of Outcome of Discussions
Details of the construction site compound(s) and number of cable gangs will be required.	Details are included within the CTMP.
HCC require confirmation of anticipated vehicular numbers and permanent access arrangements for the operational phase of the Proposed Development.	Details are included within the CTMP.
A CTMP will be required for the decommissioning phase of the Proposed Development.	This has been noted and will be dealt with at the time as necessary.
Confirmation is required of the availability of access to private properties during the installation of the Onshore Cable Corridor.	The proposals for access to residential properties, businesses and side-roads has been included within the FTMS.
Confirmation of the locations for Jointing Bays and Link Boxes are required to ensure they are not situated within highway land.	Due to the need for flexibility, it is not possible to confirm the location of Jointing Bays at this stage.
The TA should not be limited to order limits but assess impacts on the adjoining network, including the following key junctions: • **Stakes Road/Stakes Hill Road Roundabout;** • **College Road / Purbrook Road junction;** • **Asda Roundabout;** • **A3(M) junction 3; and** • **A3(M) junction 4.**	Following scoping discussions, additional traffic modelling has been conducted using the SRTM, with all junctions included within the study area. Analysis of the SRTM results has been included within the EIA and TA.

Discussion	Summary of Outcome of Discussions
The TA should assess the potential for traffic redistribution during the installation of the Onshore Cable Corridor and required mitigation.	Following scoping discussions, additional traffic modelling has been conducted using the SRTM, with all junctions included within the study area. Analysis of the SRTM results has been included within the EIA and TA.
Highways England should be consulted on the A3(M) corridor	HE have been consulted.
Clarification is sought regarding how the project team have determined the traffic sensitivity of the route. This information should be obtained from Hampshire County Council's New Roads and Street Works Act (NRSWA) team.	The route sensitivity has now been superseded by full analysis of sensitive receptors as detailed within Chapter 22 of the ES.
It is not clear what triggers a road to be considered specifically highly sensitive. **A list of all roads to be assessed and on which of the four criteria they have been triggered for assessment should be provided.**	The PEIR sensitivity has now been superseded by full analysis of sensitive receptors as detailed within Chapter 22 of the ES.
An understanding of the whole construction programme and its impacts throughout should be discussed in greater detail with relevant officers at the highway authority to ensure appropriate coordination within the programme.	Construction programme is included within Chapter 3 of the ES.

Discussion	Summary of Outcome of Discussions
Details are required on the factors assumed for TEMPRO growth rates and how these have been derived. Confirmation is sought that TEMPRO can accurately assess the impact of the additional development. Manual assignment of trips from the MDA may be a more appropriate method. In addition, confirmation is required on the level of development currently assumed within TEMPRO.	Details have been provided within the TA where appropriate, however the majority of the study area has been assessed using the SRTM.
No details of the TA have been provided.	A full TA has been completed in support of the DCO with the scope and methodology ageed with HCC and PCC prior to submission.
Personal Injury Accident (PIA) Data is considered out of date. Analysis should review whether there are any patterns of accidents which would be exacerbated by construction of the Proposed Development. A particular focus should be applied on the construction traffic route from the A3(M) to Lovedean Convertor Station.	Updated PIA data has been collected and full analysis has been included within the TA.

Discussion	Summary of Outcome of Discussions
The link sensitivity assessment work does not appear to have considered schools or picked up the Hambledon Parade shops or Purbrook shopping areas. **The table in section 5 should be amended to include existing traffic flows for comparison and checking purposes. Clarification is also sought on the type of HGV classes using the routes at present and in the forecast years.** **Some values are missing from the table and the review has also noted a significant delay on the A3 London Road corridor as a result of the works however no mitigation or acknowledgement of this is made elsewhere within the PIER.**	Further analysis has been included within the EIA, TA and TMS.
Three Traffic Management categories have been proposed of 'major, moderate and minor' based on their anticipated impact. The exact definition of these should be provided for clarity. **Any closures on the A3 London Road will likely be required at night.** **Any works on the A2030, A3 and B2177 would require comprehensive local consultation which would be outside the consultation process for the DCO application.**	Assessment has been superseded by the TA and EIA. Temporary closures of the A3 London Road are proposed for weekends only The FTMS provides full details of the communication strategy to be employed.

Discussion	Summary of Outcome of Discussions
Legal implementation of cables in the highway	If "made" the DCO will confer on to the Undertaker (and their contractors and agents) the right to carry out street works. The terms of the DCO in this regard are to be discussed to determine how the process may be best effected, including any amendments required to the NRSWA 1991 (for instance in relation to notices and notice periods) to facilitate the works being carried in the most expedient manner. This discussion will be informed by the construction methodology and the traffic management measures proposed.
There are a number of planned highway works within the area primarily as a result of the ongoing build out for the West of Waterlooville MDA site and our traffic management and safety engineering programmes. This includes a significant scheme at Ladybridge Roundabout. The programme dates for these works are broadly consistent with that proposed for this project.	All committed works will be considered as part of the construction programme as appropriate.
No details have been provided on how the presence of the plant and apparatus within the highway will be recorded. Clarification on who is to do this and how it will be made available is required.	If "made" the DCO will confer on to the Undertaker (and their contractors and agents) the right to carry out street works. The terms of the DCO in this regard are to be discussed to determine how the process may be best effected, including any amendments required to the NRSWA 1991 (for instance in relation to notices and notice periods) to facilitate the works being carried in the most expedient manner. This discussion will be informed by the construction methodology and the traffic management measures proposed.

1.2.7. HAVANT BOROUGH COUNCIL

Discussion	Summary of Outcome of Discussions
The preliminary nature of the information in the PEIR, means that we cannot conclude what the full impact of the works on the A3 would be. Further details are required regarding the traffic management strategy and the subsequent impacts on traffic flow.	
The EIA and accompanying appendices should clearly document in a table any consultations undertaken with regards to the scope of the proposed assessment, including matters agreed/not agreed. Where the scope differs from that requested by the relevant highways authority, the ES should provide justification for the alternative approach. This is as per the Scoping Opinion provided by the Secretary of State on 07/12/18.	Full assessment has been included within the EIA and accompanying Transport Assessment.
Considering the preliminary nature of the information provided in the PEIR and the need to undertake further traffic surveys, it is considered that the assessment of cumulative environmental effects in the EIA would be too late for HBC to influence the proposal.	Full assessment has been included within EIA and accompanying Transport Assessment.
There are several committed works by the Highway Authority, primarily in relation to the West of Waterlooville MDA, including improvements at the roundabout with Ladybridge Road. the construction programme should be coordinated with these to avoid conflict and delay.	All committed works will be considered as part of the construction programme as appropriate.

1.2.8. HIGHWAYS ENGLAND

Discussion	Summary of Outcome of Discussions
The impact of redistributing traffic to the SRN because of the works associated with the installation of the Onshore Cable Corridor needs to be fully assessed. This includes the impact to junctions 2, 3, 4 and 5 of the A3(M) and their associated slip roads. Such matters are considered important from the perspective of maintaining network resilience and journey time reliability.	Full assessment has been included within the EIA and accompanying Transport Assessment.

1.2.9. HORNDEAN PARISH COUNCIL

Discussion	Summary of Outcome of Discussions
The anticipated levels of construction traffic will potentially give rise to significant congestion along the A3 corridor, in the village centre and on Lovedean Lane. A traffic management plan will need to be in place to mitigate any impacts.	Full assessment has been included within the EIA and accompanying Transport Assessment.

1.2.10. PORTSMOUTH CITY COUNCIL

Discussion	Summary of Outcome of Discussions
Wider network assessments of the impact of the proposed traffic management are required.	Full assessment has been included within the EIA and accompanying Transport Assessment using the SRTM.

Discussion	Summary of Outcome of Discussions
The scale of any delays needs to be quantified to understand the likely impact to emergency services and how to respond accordingly.	Full assessment has been included within the EIA and accompanying Transport Assessment using the SRTM .
Reduction in capacity on the A2030 Eastern Road due to roadworks would reduce resilience on an already strained network. It is questionable how this could be mitigated.	Impacts have been fully assessed within the Transport Assessment. The construction programme will aim to minimise impacts by scheduling outside of busy periods, including use of night-time works.
The Onshore Cable Corridor uses mostly classified roads that form a key corridor to the mainland. It is expected that motorised and non-motorised users will be significantly affected.	Further assessments on all users has been included within the EIA and Transport Assessment.
It is unlikely that the proposed working hours of 07:00-19:00 will be permitted. Planned works on traffic sensitive routes are normally only allowed during off-peak hours (09:30-15:30).	The FTMS provides details of the construction programme for the Onshore Cable Corridor, including how events and other times of year will be avoided to minimise impacts.
Portsmouth also operates several works embargoes coinciding with major events, Bank Holidays and for the entire month of December. Only emergency works will be permitted during such times. The proposed works is likely to clash with committed schemes being delivered within Portsmouth including those associated with the Transforming Cities Fund.	
The routing of abnormal loads carrying the 50T cable drums from the Ferryport through the city centre would disrupt traffic and bus services even during off peak hours.	It is not proposed to route cable drum deliveries thorough the city centre. Instead they would be routed along the M275 and A27 Havant Bypass. Consideration for abnormal loads will be given in the EIA.

Discussion	Summary of Outcome of Discussions
A detailed Construction Traffic Management Plan would be required, tailored for each phase. This would set out the Traffic Management requirements and associated drawings which will need to be agreed by the Highway Authority and Colas.	A Construction Traffic Management Plan has been completed for the DCO.
Where roads closures are required, access for residents and business should be retained at all times.	Access to residential properties will be maintained where possible but some vehicular restrictions will be required when cable installation is underway immediately outside an access. This will impact individual properties for a maximum of 1-2 weeks per circuit, during which time pedestrian and cycle access will be retained at all times.
Coordination is required between contractors to avoid any unnecessary delays. The Construction Traffic Management Plan should detail how this would work and who will ultimately be responsible.	A Construction Traffic Management Plan has been completed for the DCO.
The City Council is currently in receipt of ministerial directives from DEFRA with regards to Air Quality in Portsmouth. Whilst the areas subject to these directives are not located along the proposed Onshore Cable Corridor, it is likely that traffic redistribution could affect them (A3 & A2047 corridors) and exacerbate matters. Therefore, alternative routes for the Onshore Cable Corridor should be considered.	Further assessment have been included as part of the Air Quality Chapter in the EIA.

Discussion	Summary of Outcome of Discussions
The applicant will need to mitigate substantial impacts on the transport network as per paragraph 5.13.9 in The Overarching National Policy Statement for Energy (ONPSE EN-1). This could include funding contributions to bring forward proposed capacity enhancements for the Park and Ride at Tipner.	Full assessment of impacts has been included within EIA and accompanying Transport Assessment using the SRTM.
Under the New Roads and Street Act, all works on the public highway are required to have notices served correctly on the Street Works Register with appropriate traffic regulation orders. Colas highlight a need for collaborative working/programming.	This has been discussed with PCC and HCC.

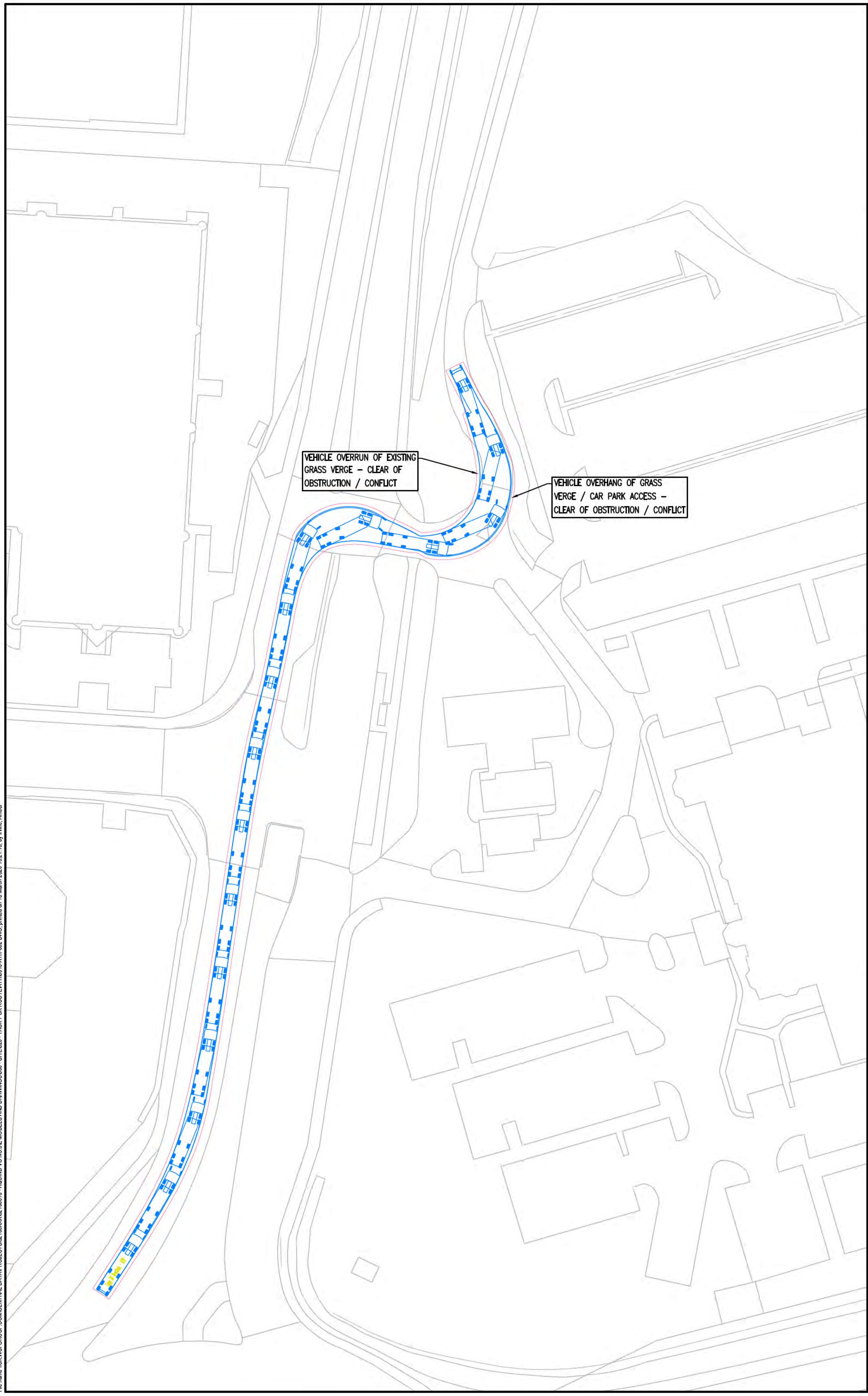
1.2.11. SOUTH DOWNS NATIONAL PARK

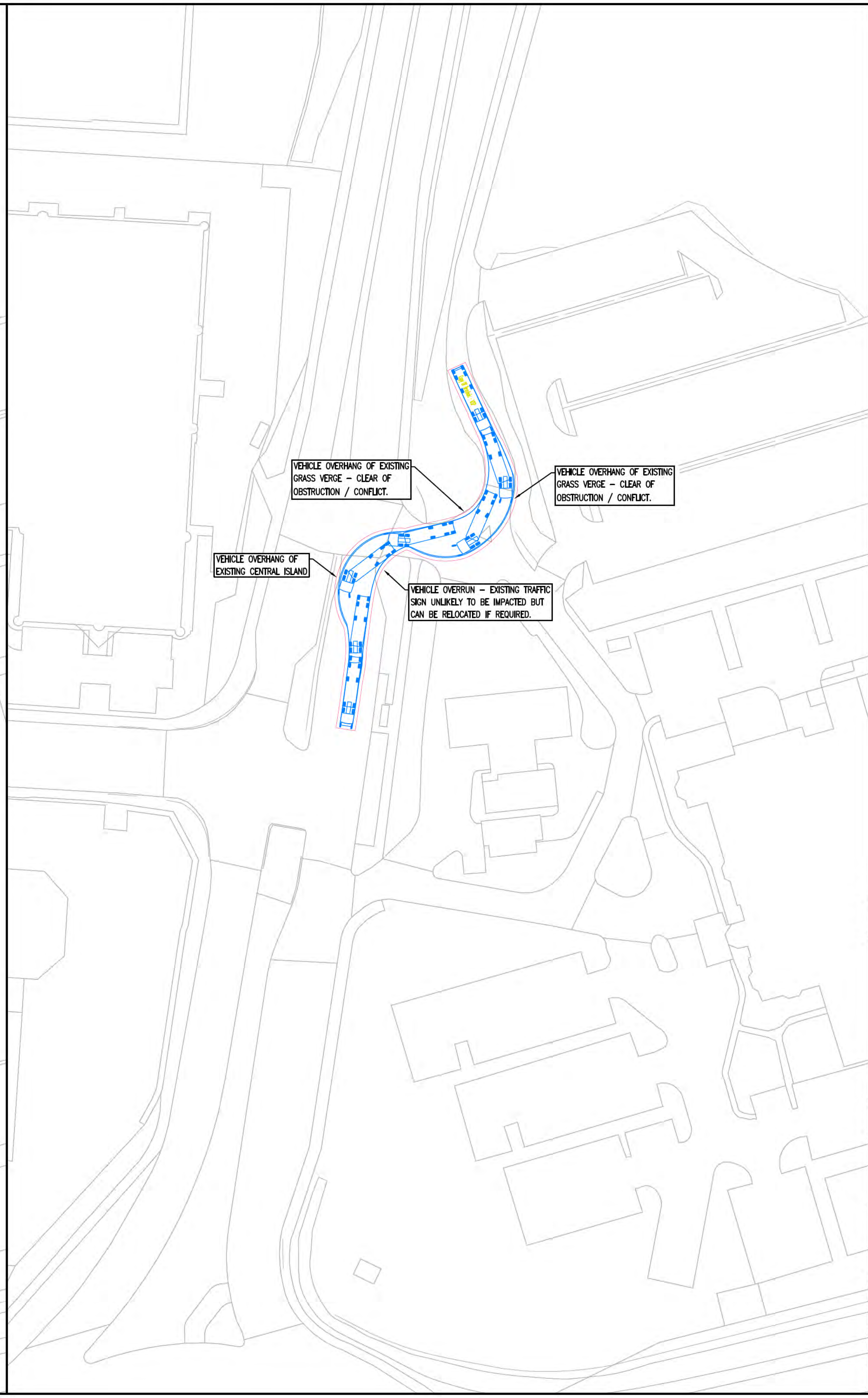
Discussion	Summary of Outcome of Discussions
The impact of the Monarch's Way Long Distance footpath has not been sufficiently recognised.	An assessment of Monarch's Way has been included in the EIA.

1.2.12. WINCHESTER CITY COUNCIL

Discussion	Summary of Outcome of Discussions
Within the PEIR there were some inconsistencies relating to the terminology that had been used and data relating to the duration of the installation of the Onshore Cable Corridor.	Clarification has been provided. PEIR terminology referred to construction durations per circuit.
Considered the preliminary nature of the information contained with the PEIR, further detail is required on the assessment of impacts arising from the proposed traffic management. In particular additional clarification is required regarding the proposed traffic management along the B2150 Hambledon Road and its impacts.	A full assessment of the impacts of the proposed traffic management along the B2150 Hambledon Road has been provided in the EIA and associated TA.

Appendix 2 – Swept Path Analysis

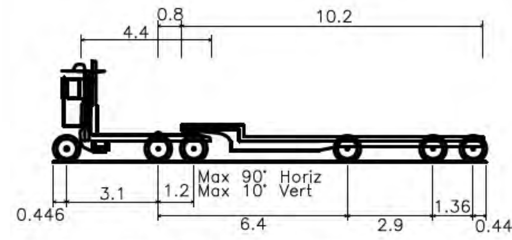




DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. A CLEARANCE OF 700mm HAS BEEN INCORPORATED INTO THE SWEPT PATHS TO REPRESENT THE CABLE DRUM OVERHANG.



Copy Of Broshuis – WSP

Overall Length	14.652m
Overall Width	2.550m
Overall Body Height	3.417m
Min Body Ground Clearance	0.341m
Track Width	2.550m
Lock to lock time	6.00s
Wall to Wall Turning Radius	12.500m

REV	DATE	BY	DESCRIPTION	CHK	APP
A	18/03/2020	AVI	FIRST ISSUE	GCB	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

wsp

Grosvenor House, 2 Grosvenor Square, Southampton, SO15 2BE, UK
T+ 44 (0) 2380 101 700
wsp.com

CLIENT: AQUIND

ARCHITECT: -

SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF CONSTRUCTION VEHICLE ACCESS TO FARLINGTON PLAYING FIELDS FOR HDD-3 INSTALLATION

SCALE @ A1:	CHECKED:		APPROVED:
1:500	GCB		CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: March 20

DRAWING No: 0616-ATR-002 | REV: A

Appendix 6 – Tech Note HE02

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE02 – Response to Highways England Comments

The Planning Act 2008

Document Ref: HE02

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE02 – Response to Highways England Comments

PINS REF.: EN020022

DOCUMENT: HE02

DATE: JUNE 2020

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE02 – Response to Highways England Comments

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	Document Name
Revision	002
Document Owner	WSP UK Limited
Prepared By	Grace Blizard
Date	24/06/20
Approved By	Chris Williams
Date	24/06/20

CONTENTS

TABLES

APPENDICES

1. INTRODUCTION

1.1.1.1. This Technical Note (HE02) has been prepared in response to representation made by AECOM on behalf of Highways England (HE) in relation to the submission documents for the AQUIND Interconnector DCO application. Comments made by AECOM were made within an email dated 4 May 2020 requesting further clarifications to facilitate the review of WSP's previous Technical Note HE01.

1.1.1.2. This Technical Note seeks to respond to these comments in the order received within AECOM's correspondence, contained in **Appendix 1** for reference.

1.2. RELEVANT POST-SUBMISSION UPDATE

1.2.1.1. Following the submission of the Transport Assessment (Examination library reference: APP: 448), there have been some amendments to the proposed timing of construction traffic movements to and from the proposed Converter Station Area within the PM peak. These updates will be presented in full within a Supplementary Transport Assessment which is currently in preparation. By way of an update at this stage, the impact of these changes on the Dell Piece West / A3 Portsmouth Road / Catherington Lane signalised junction and Junction 2, A3 (M) have been assessed and is included in Section 3 of this Technical Note.

2. RESPONSE TO COMMENTS

2.1. ITEM 1

"Confirm whether the 31 weeks duration of works at site HDD3 and the 26 weeks at site HDD4 listed in Table 4 will be sequential (i.e. 56 weeks in total) or concurrent; and/or let us have your best estimate of how many weeks the HDD site at Farlington Playing Fields will be operational."

2.1.1.1. Works on sites HDD3 and HDD4 are likely to occur concurrently. Based on anticipated phasing of works covering these sites, which will be required to accommodate local events and environmental constraints such as wintering bird season, access via Farlington Playing Fields is anticipated to be required for a period of up to 52 weeks. It should be noted that until a construction contractor is appointed, the exact details of construction phasing and duration of works will not be known. Therefore, the above approximation is a best estimate of construction duration at this stage of the design, taking into account professional judgement, known local events and environmental considerations necessary for completing the works.

2.2. ITEM 2

"You have kindly provided a swept path plot for an over-sized HGV accessing and egressing Farlington Playing Fields. It is evident that this will have to be done under traffic management conditions, since it will involve emerging on to the A2030 through an access point currently signed as one-way inbound. Para 7.2.1.2 states that this operation would only occur twice during the course of the works. However, we do also need to see HGV swept path plots for the standard-sized HGVs that will need to access Farlington Playing Fields on a regular basis. Your para 7.1.1.3 asserts that these types of vehicle already use the junction to access the petrol filling station and the Holiday Inn. However, it is evident that the access to the playing fields is more onerous both in terms of corner radii and carriageway width than these existing land uses and your para 7.3.1.5 suggests that there could be around 1-2 such HGV movements per hour. In order to close this matter out, please therefore provide us with HGV swept path plots to show that standard-sized HGVs can access the playing fields on a regular basis without compromising the operation of the junction for existing regular users."

2.2.1.1. Swept path analysis for a 20t tipper vehicle has been undertaken as shown on drawing 0616-ATR-004 contained in **Appendix 2**. This type of vehicle represents the largest of those vehicles anticipated to access the site on a more regular basis than the previously tracked Cable Drum delivery vehicles. The swept paths demonstrate that a 20t tipper would be able to enter Farlington Playing Fields via the A2030 access north of the PFS, and exit via the route to the east and south of the PFS onto A2030 Eastern Road southbound. The swept paths demonstrate that these movements can be undertaken without overrun or overhang of surrounding non-carriageway areas, therefore resulting in a lower impact than the more infrequent Cable Drum delivery vehicles.

2.3. ITEM 3

"Please confirm whether the 1-2 vehicles per hour referred to at para 7.3.1.5 includes workforce-related trips or whether these are just HGV trips. If these are just HGV trips, please provide an estimate of workforce-related vehicle movements."

2.3.1.1. Para 7.3.1.5 refers to HGV construction vehicles which will carry a proportion of the required workforce to site. The remaining workforce will travel to site by minibus and work vans generating two trips at the start and end of each shift. Daily working hours at the HDD-3 site will be based on 12-24 hour shifts, with worker changeovers occurring at 07:00 and 19:00. Where 12-hour shifts are used, there will be approximately 12 construction vehicle trips per day and where 24-hour shifts are used this will double to 24 construction vehicle trips per day

2.4. ITEM 4

"In respect of A3(M) Junctions 2 and 3, please provide copies of the ARCADY models referred to at para 9.1.1.2, in both PDF form and as Junctions9 files, together with the source of geometric and traffic flow data for these models, i.e. annotated layout drawings and traffic flow diagrams, so that we can undertake a technical review of the modelling and fully understand the results. In the TA these junctions are reported as generating significant queueing on the A3(M) slip roads and Highways England will want to be confident in your assertion that there is no risk of these queues extending back on to the main carriageways of the A3(M)"

2.4.1.1. Junctions 9 files prepared for the modelling of A3(M) Junctions 2 and 3 have been provided with the submission of this Technical Note. To accompany the review, geometric measurements as input to the modelling have been presented on scaled drawings in **Appendix 3**, along with SRTM traffic flow data received from Systra for these two junctions.

2.5. ITEM 5

"In respect of A3(M) Junctions 2 and 3, are you aware of any committed developments in the vicinity, and/or any proposed schemes to upgrade these junctions and, if so, how have you accounted for this in the modelling"

2.5.1.1. A Technical Note 'SRTM Coding Note' (contained in Appendix B of ES Appendix 22.1, Examination Library Reference: APP-448) was prepared prior to submission which set out the scope and inputs for use within the SRTM modelling to support the Transport Assessment. The final version took account of feedback from both Portsmouth City Council (PCC) and Hampshire County Council (HCC).

2.5.1.2. Contained within Table 2-1 of the document, a number of major development schemes were listed as included within the SRTM. Those sites closest to these junctions are listed in Table 1 below.

Table 1 – Major Committed Development Sites

Location	Description	Forecast dwellings completed by 2027
Waterlooville MDA	Residential development – 2,114 dwellings	1,650
Woodcroft Farm, Woodcroft Lane, Wecock, Waterlooville	Residential development - 288 dwellings	288
Grainger Development Site, London Road, Waterlooville	Residential development - 436 dwellings	67
*Development Land East of Horndean, Rowlands Castle Road, Horndean	Residential development - 800 dwellings	800

**Not included within SRTM Coding Note but confirmed by Systra as being included*

2.5.1.3. The number of dwellings pertaining to these committed developments that have been included within the assessed SRTM 2026 scenario are based upon anticipated build-out for each site by 2027.

2.5.1.4. In terms of committed transport schemes, the SRTM included the signalisation of the A3(M) northbound off-slip approach to the Junction 3 roundabout, as outlined in Paragraph 2.3.5 of the 'SRTM Coding Note'. The junction has been modelled using SRTM traffic forecasts for 2026, which these improvements are identified to accommodate. It is acknowledged that these improvements are unlikely to be delivered prior to works associated with AQUIND, however, the existing layout has been used within the standalone junction assessment which represents a more robust approach in testing its capacity.

2.5.1.5. Improvements are also proposed for the A3(M) Junction 2 as part of a development at Land East of Horndean, Rowlands Castle Road, Horndean, which proposes 800 dwellings and other complimentary uses. Both the consented scheme (55562/001), approved in 2016, and a revised scheme awaiting decision following planning committee held on 11 June 2020 (55562/005), included proposals to signalise A3(M) Junction 2. The SRTM assumptions did not include this mitigation scheme, although it did include the demand generated by the proposed development. Given that the junction has been modelled within the AQUIND Transport Assessment in its existing form without this mitigation, and no capacity concerns have been reported under such assessment, it is considered that a robust approach has also been taken for the modelling of this junction.

2.6. ITEM 6

"Please explain the units used in the traffic flows in Table 2: these appear to be too high to be peak hourly flows but too low to be AADTs (as suggested by the Table). Are they peak period flows? If so, please state how many hours the peak period covers and what is the relationship between these flows and the peak hourly flows which have presumably been used in the ARCADY models"

2.6.1.1. The traffic flows provided in Table 2 of Technical Note HE01 refer to peak periods for the AM (07:00-10:00) and PM (16:00-19:00).

2.6.1.2. For completeness, peak hour traffic flows are provided in the table presented in **Appendix 4**, which presents a comparison of SRTM forecast traffic flows on the Strategic Road Network between the DM, DS1 and DS2 scenarios.

2.7. ITEM 7

"Please advise to what extent has the modelling undertaken to date been agreed with the two Local Highway Authorities, Hampshire County Council and Portsmouth City Council."

2.7.1.1. As referenced above, the 'SRTM Coding Note' (contained in Appendix B of ES Appendix 22.1, Examination Library Reference: APP-448) was issued in draft for HCC and PCC review on 12 June 2019. This document was discussed as part of pre-application scoping meetings with HCC and PCC on 20 June, 3 and 10 July 2019 and feedback received was incorporated into a revised version issued on 12 July 2019.

2.7.1.2. Upon issue of the final version, further comments were invited within a reasonable timeframe. To ensure project progress could be maintained, WSP advised that should no further comments be received within this period, it would be assumed that a scoping agreement had been reached.

2.7.1.3. No further comments were received, and the SRTM modelling was subsequently undertaken in accordance with the assumptions set out in the 'SRTM Coding Note'.

2.7.1.4. Since submission of the DCO, further discussions have been held with both HCC and PCC concerning transport matters and no request for further strategic traffic modelling has been received.

3. ADDITIONAL ASSESSMENT OF CONSTRUCTION WORKER TRIPS DURING PM PEAK

3.1. INTRODUCTION

3.1.1.1. Since submission of the Transport Assessment the assumption applied to the movement of construction worker trips has changed.

3.1.1.2. At submission the assumption was that all construction workers associated with the Onshore Cable Corridor will arrive at the Converter Station Area compound between 06:00-07:00 and depart between 18:00-19:00 to reflect the 07:00 to 17:00 working day at each Cable Route construction location and taking account of travel time between the Converter Station and construction location.

3.1.1.3. It is now understood however that the 07:00 to 17:00 working day is inclusive of arrival and departure times at the Converter Station Area compound. This is to take account of the need to provide access to properties adjacent to the Onshore Cable Corridor at the start and end of the working day, ensuring access is available at 07:00 and by 17:00. This means that the following construction worker trips are likely to occur between 17:00 and 18:00 in proximity to the Converter Station and A3(M) Junction 2:

- 12 non-HGV construction vehicles returning to the Converter Station compound from the six construction locations along the Onshore Cable Route (two vehicles per site); and
- 42-48 construction worker car trips exiting the Converter Station compound at the end of their working day.

3.1.1.4. The impact of these additional trips has been assessed below for the following junctions:

- Dell Piece West/ A3 Portsmouth Road/ Catherington Lane Traffic Signal Junction; and
- A3 (M) Junction 2.

3.1.2. DELL PIECE WEST / A3 PORTSMOUTH ROAD / CATHERINGTON LANE JUNCTIONS

3.1.2.1. The turning counts for this junction assessment have been taken directly from the SRTM outputs and have been modelled in the PM peak with the addition of the movements associated with construction which are anticipated to travel through this junction in this time period.

3.1.2.2. The results of this junction with the inclusion of additional construction traffic from DS1 and DS2 are included in Table 2 and Table 3.

Table 2 - Dell Piece West / A3 Portsmouth Road / Catherington Lane DS1 Modelling Results with addition of Construction Traffic

Do Something 1		PM Peak 17:00-18:00		
Lane	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	B2149 Dell Piece West Left Turn	108%	46	196
1/2 + 1/3	B2149 Dell Piece West Ahead + Right Turn	99%	22	120
2/1 + 2/2	A3 Portsmouth Road South Ahead + Left Turn	92%	15	90
2/3	A3 Portsmouth Road South Right Turn	91%	15	87
4/1 + 4/2	Catherington Lane Left + Ahead + Right Turn	108%	60	196
6/1	A3 Portsmouth Road North Left Turn	17%	3	38
6/2	A3 Portsmouth Road Bus Lane Ahead	0%	0	0
6/3 + 6/4	A3 Portsmouth Road North Ahead + Right Turn	78%	5	85
Overall		PRC: -19.0% Cycle Time: 120s		

Table 3 - Dell Piece West / A3 Portsmouth Road / Catherington Lane DS2 Modelling Results with addition of Construction Traffic

Do Something 2		**PM Peak 17:00-18:00**		
Lane	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	B2149 Dell Piece West Left Turn	108%	46	196
1/2 + 1/3	B2149 Dell Piece West Ahead + Right Turn	99%	22	120
2/1 + 2/2	A3 Portsmouth Road South Ahead + Left Turn	92%	15	91
2/3	A3 Portsmouth Road South Right Turn	90%	15	86
4/1 + 4/2	Catherington Lane Left + Ahead + Right Turn	107%	59	196
6/1	A3 Portsmouth Road North Left Turn	17%	3	38
6/2	A3 Portsmouth Road Bus Lane Ahead	0%	0	0
6/3 + 6/4	A3 Portsmouth Road North Ahead + Right Turn	77%	5	85
Overall		PRC: -18.9% Cycle Time: 120s		

3.1.2.3. The modelling results in Table 2 and Table 3 forecast a minor adverse impact on the operation of the signal junction in both DS1 and DS2 scenarios. The approach from the A3 Portsmouth Road South Right turn forecasts 16 seconds increase in delay with the mean maximum queue extending by three PCUs in both scenarios due to the increase in construction vehicles. The queue on Dell Piece West will extend through the upstream Lakesmere Road roundabout, which provides access to Morrisons Supermarket and Horndean Interchange Industrial Estate, although noting that this is also expected to occur in the DS1 and DS2 scenarios without the addition of construction traffic movements.

3.1.3. A3 (M) JUNCTION 2

3.1.3.1. The turning counts for this junction assessment have been taken directly from the SRTM outputs and have been modelled in the PM peak with the addition of the movements associated with construction which are anticipated to travel through this junction in this time period.

3.1.3.2. The assessment included in this section should be taken to supersede that which was included for the DS1 and DS2 PM peak at this junction in Table 106 and Table 107 in Section 1.12.4 of the TA. The DM flows have not been altered from those included in the submitted TA, the outputs for this scenario are reproduced below however for the purposes of comparison to the now updated DS scenarios which include additional construction traffic in the PM peak.

3.1.3.3. The 2026 DM results can be seen in Table 4 below, the results for DS1 in Table 5 and DS2 in Table 6.

Table 4 - 2026 DM PM peak A3 (M) Junction 2

	RFC	Queue PCU	Delay (s)
Dell Piece East	0.40	1	4
A3 (M) south	0.89	8	24
B2149 Dell Piece West	0.61	2	4
A3 (M) north	0.93	12	28

3.1.3.4. The results for the DM demonstrate that the junction operates approaching its theoretical capacity on the two A3 (M) arm in the PM peak with the longest queue being of 12 PCU and the maximum delay being of 28 seconds.

Table 5 -2026 DS1 PM peak A3 (M) Junction 2 with addition of Construction Traffic

	RFC	Queue PCU	Delay (s)
Dell Piece East	0.44	1	5
A3 (M) south	0.98	21	57
B2149 Dell Piece West	0.58	2	4
A3 (M) north	0.93	13	30

3.1.3.5. The results of the DS1 assessment, much like those for the DM show both of the A3 (M) arms to be approaching capacity, with both Dell Piece East and B2149 Dell Piece West being able to operate well within their theoretical capacities. This is an increase of a maximum of two additional queueing PCU in comparison to the results presented in the PM peak in DS1 in Table 106 of the submitted TA.

Table 6 -2026 DS2 PM peak A3 (M) Junction 2 with addition of Construction Traffic

	RFC	Queue PCU	Delay (s)
Dell Piece East	0.44	1	5
A3 (M) south	0.98	21	56
B2149 Dell Piece West	0.58	2	4
A3 (M) north	0.93	13	31

3.1.3.6. The results of the DS2 assessment, again much like those for the DM and DS1 show both of the A3 (M) arms to be approaching capacity, with both Dell Piece East and B2149 Dell Piece West being able to operate well within their theoretical capacities. This is an increase of a maximum of two additional queueing PCU in comparison to the results presented in the PM peak in DS2 in Table 107 of the submitted TA.

3.2. CONCLUSION

3.2.1.1. This situation is reflective of the worst-case traffic management scenario assessed within the SRTM and therefore the operation of the above assessed junctions is more likely to improve upon the results presented. To minimise impact and ensure the worst-case scenario does not materialise, the FTMS outlines a construction programme that prevents works being undertaken in close proximity to one another, thereby reducing the cumulative impacts of the construction works to a level below that assessed.

3.2.1.2. Additionally, it is important to consider that the improvements to Junction 2, A3(M) likely to come forward with the development at Land East of Horndean, Rowlands Castle Road, Horndean have not been factored into the junction assessments undertaken. Nevertheless, the demand associated with the Land East of Horndean development has been included within the SRTM assumptions and thus within the junction assessments.

3.2.1.3. This situation is therefore unlikely to occur in reality, while any impact would also be temporary in nature in reflection of the transient nature of the construction works along the Onshore Cable Corridor.

Appendix 1 – AECOM Comments (Email Dated 2020-05-04)

[redacted]

From: Cuthbert, Andrew <andrew.cuthbert@aecom.com>
Sent: 04 May 2020 11:47
To: Williams, Chris <Chris.Williams@wsp.com>
Cc: Patrick Blake (patrick.blake@highwaysengland.co.uk) <patrick.blake@highwaysengland.co.uk>; Sivanathan, Senthi <Senthi.Sivanathan@aecom.com>
Subject: RE: Aquind Interconnector - Meeting with Highways England

Chris,

We are currently in the process of reviewing this Technical Note on behalf of Highways England.

In order to make a more effective review, and to assist Highways England in reaching a more conclusive position, I have agreed with Patrick Blake that we would seek further detail and clarification on a number of issues. I would therefore be grateful if the following could be provided or clarified:

1. Please confirm whether the 31 weeks duration of works at site HDD3 and the 26 weeks at site HDD4 listed in Table 4 will be sequential (i.e. 56 weeks in total) or concurrent; and/or let us have your best estimate of how many weeks the HDD site at Farlington Playing Fields will be operational.
2. You have kindly provided a swept path plot for an over-sized HGV accessing and egressing Farlington Playing Fields. It is evident that this will have to be done under traffic management conditions, since it will involve emerging on to the A2030 through an access point currently signed as one-way inbound. Para 7.2.1.2 states that this operation would only occur twice during the course of the works. However, we do also need to see HGV swept path plots for the standard-sized HGVs that will need to access Farlington Playing Fields on a regular basis. Your para 7.1.1.3 asserts that these types of vehicle already use the junction to access the petrol filling station and the Holiday Inn. However, it is evident that the access to the playing fields is more onerous both in terms of corner radii and carriageway width than these existing land uses and your para 7.3.1.5 suggests that there could be around 1-2 such HGV movements per hour. In order to close this matter out, please therefore provide us with HGV swept path plots to show that standard-sized HGVs can access the playing fields on a regular basis without compromising the operation of the junction for existing regular users.
3. Please confirm whether the 1-2 vehicles per hour referred to at para 7.3.1.5 includes workforce-related trips or whether these are just HGV trips. If these are just HGV trips, please provide an estimate of workforce-related vehicle movements.
4. In respect of A3(M) Junctions 2 and 3, please provide copies of the ARCADY models referred to at para 9.1.1.2, in both PDF form and as Junctions9 files, together with the source of geometric and traffic flow data for these models, i.e. annotated layout drawings and traffic flow diagrams, so that we can undertake a technical review of the modelling and fully understand the results. In the TA these junctions are reported as generating significant queueing on the A3(M) slip roads and Highways England will want to be confident in your assertion that there is no risk of these queues extending back on to the main carriageways of the A3(M);
5. In respect of A3(M) Junctions 2 and 3, are you aware of any committed developments in the vicinity, and/or any proposed schemes to upgrade these junctions and, if so, how have you accounted for this in the modelling;
6. Please explain the units used in the traffic flows in Table 2: these appear to be too high to be peak hourly flows but too low to be AADTs (as suggested by the Table). Are they peak period flows? If so, please state how many hours the peak period covers and what is the relationship between these flows and the peak hourly flows which have presumably been used in the ARCADY models;
7. Please advise to what extent has the modelling undertaken to date been agreed with the two Local Highway Authorities, Hampshire County Council and Portsmouth City Council.

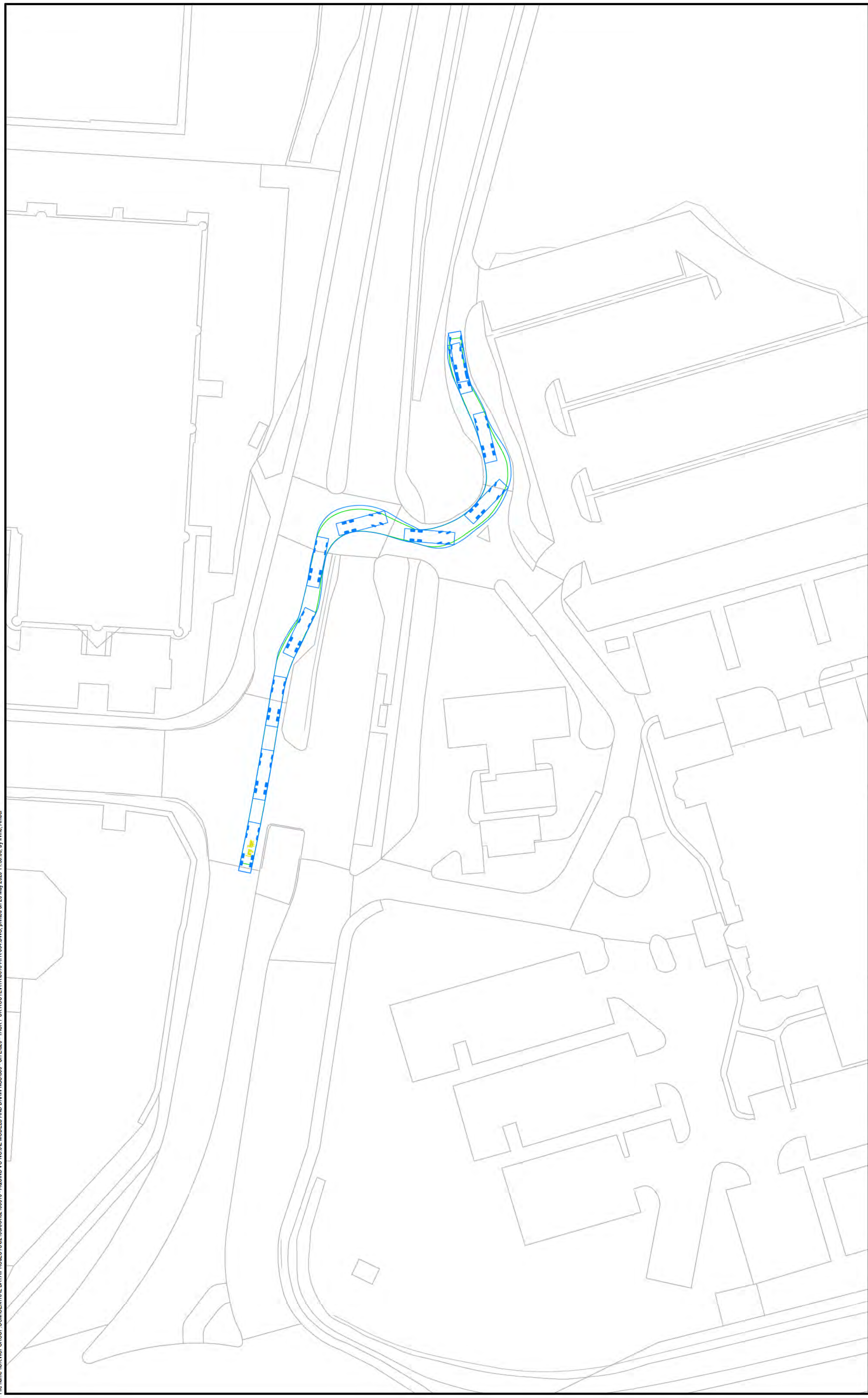
I trust this request will not be too onerous. Please be assured that Patrick Blake and I both consider all of the above to be essential in allowing Highways England to make a positive response to your Client's proposals.

Regards,

Andrew Cuthbert, BSc MSc CMCILT MCIHT
Associate Director, Transport Planning, Chelmsford
M [redacted]
andrew.cuthbert@aecom.com

AECOM
Saxon House
27 Duke Street
Chelmsford, Essex CM1 1HT, UK
T +44-01245-771200
aecom.com

Appendix 2 – Swept Path Analysis (Farlington Playing Fields)

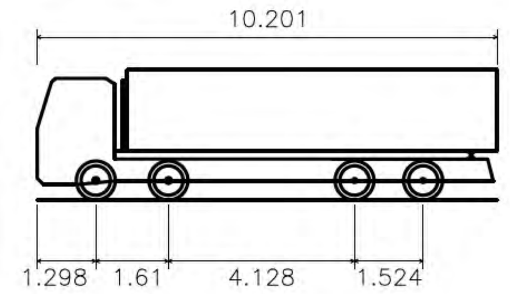


DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A SPEED OF 5mph.

VEHICLE PROFILE:



Large Tipper	
Overall Length	10.201m
Overall Width	2.495m
Overall Body Height	2.890m
Min Body Ground Clearance	0.341m
Track Width	2.471m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	11.550m

THIS PROVISIONAL PRELIMINARY DESIGN IS FOR GUIDANCE PURPOSES ONLY. WSP ACCEPTS NO LIABILITY FOR ANY DAMAGE, LOSS, EXPENSES OR COST INCURRED AS A RESULT OF RELYING ON THE INFORMATION PROVIDED IN THE DESIGN APPRAISAL ESTIMATE. THE APPRAISAL ESTIMATE WAS DERIVED FROM A MIXTURE OF THIRD PARTY INFORMATION AND THE APPLICATION OF WSP'S REASONABLE SKILL AND CARE, BUT MAY BE SUBJECT TO OTHER SUCH INFORMATION AND VARIATIONS OF WHICH WSP IS UNAWARE. THE DESIGN APPRAISAL ESTIMATE SHOULD NOT BE RELIED UPON FOR TENDER OR PROCUREMENT PURPOSES. FOR ACCURATE ADVICE A DETAILED DESIGN SHOULD BE CARRIED OUT AT THE APPROPRIATE DESIGN STAGE, THEREFORE, USE OF THE INFORMATION IS ENTIRELY AT YOUR OWN RISK.

REV	DATE	BY	DESCRIPTION	CHK	APP
A	26/05/2020	AVI	FIRST ISSUE	GCB	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

wsp
Grosvenor House, 2 Grosvenor Square, Southampton, SO15 2BE, UK
T+ 44 (0) 2380 101 700
wsp.com

CLIENT: AQUIND

ARCHITECT: -

SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF '20T TIPPER' ACCESS TO FARLINGTON PLAYING FIELDS FOR HDD-3 INSTALLATION

SCALE @ A1:	CHECKED:		APPROVED:
1:500	GCB		CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: May 20

DRAWING No: 0616-ATR-004 | REV: A

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\62100XXX\62100616 - AQUIND VO NO.3\E MODELS AND DRAW NGS\300 - SITE\320 - TASK 7 UK ROUTE\ATR\0616-ATR-004.DWG, printed on 26 May 2020 11:39:50, by Irvine, Amber

Appendix 3 – A3(M) Junctions 2 & 3 Modelling Input

AQUIND INTERCONNECTOR UK - 108963 | CORDONED TURNING COUNTS

Junction: Junction 2, A3 (M)

Date: 01/10/2019

Note:
All data is Actual Flow in PCUs

SYSTRA

ELM - Do Minimum

AM	1001	1002	1003	1004	1005	1006
1001	0	0	733	1	0	251
1002	0	0	0	0	0	0
1003	0	404	0	0	0	257
1004	0	0	0	0	0	0
1005	0	0	0	0	0	1063
1006	0	574	853	399	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	837	0	0	263
1002	0	0	0	0	0	0
1003	0	149	0	0	0	259
1004	0	0	0	0	0	0
1005	0	0	0	0	0	845
1006	0	440	652	456	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	1154	1	0	315
1002	0	0	0	0	0	0
1003	0	141	0	0	0	464
1004	0	0	0	0	0	0
1005	0	0	0	0	0	1139
1006	0	818	52	703	0	0

EMM - DS1 - Southbound Closure

AM	1001	1002	1003	1004	1005	1006
1001	0	0	741	0	0	223
1002	0	0	0	0	0	0
1003	0	414	0	0	0	290
1004	0	0	0	0	0	0
1005	0	0	0	0	0	1159
1006	0	599	853	360	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	885	0	0	239
1002	0	0	0	0	0	0
1003	0	208	0	0	0	269
1004	0	0	0	0	0	0
1005	0	0	0	0	0	859
1006	0	320	604	330	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	1163	0	0	292
1002	0	0	0	0	0	0
1003	0	212	0	0	0	456
1004	0	0	0	0	0	0
1005	0	0	0	0	0	1220
1006	0	640	57	703	0	0

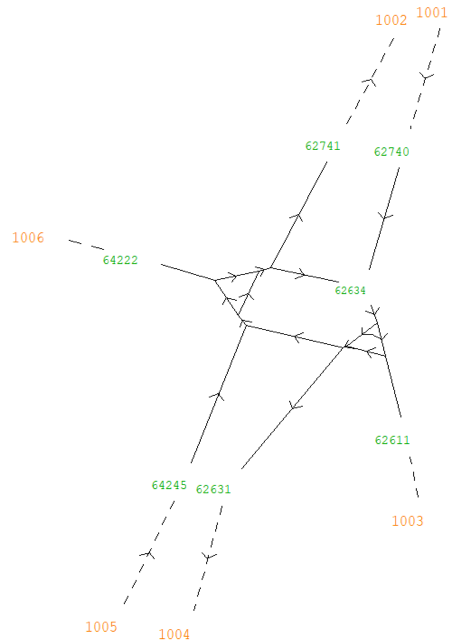
EML - DS2 - Northbound Closure

AM	1001	1002	1003	1004	1005	1006
1001	0	0	741	0	0	224
1002	0	0	0	0	0	0
1003	0	416	0	0	0	289
1004	0	0	0	0	0	0
1005	0	0	0	0	0	1154
1006	0	600	852	361	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	884	0	0	239
1002	0	0	0	0	0	0
1003	0	208	0	0	0	271
1004	0	0	0	0	0	0
1005	0	0	0	0	0	858
1006	0	319	604	325	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	1165	0	0	290
1002	0	0	0	0	0	0
1003	0	212	0	0	0	450
1004	0	0	0	0	0	0
1005	0	0	0	0	0	1225
1006	0	642	59	703	0	0

Ref	Arm
1001	A3(M) Southbound Off-slip
1002	A3(M) Northbound On-slip
1003	Dell Piece E
1004	A3(M) Southbound On-slip
1005	A3(M) Northbound Off-slip
1006	B2149



AQUIND INTERCONNECTOR UK - 108963 | CORDONED TURNING COUNTS

Junction: A3 Hulbert Road Roundabout

Date: 12/08/2019

Note:
All data is Actual Flow in PCUs

SYSTRA

ELM - Do Minimum

AM	1001	1002	1003	1004	1005	1006
1001	0	0	574	853	399	0
1002	252	0	0	733	3033	0
1003	0	0	0	0	0	0
1004	257	0	404	0	0	0
1005	0	0	0	0	0	0
1006	1063	0	2616	0	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	440	652	456	0
1002	263	0	0	837	2493	0
1003	0	0	0	0	0	0
1004	259	0	149	0	0	0
1005	0	0	0	0	0	0
1006	845	0	1840	0	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	818	52	703	0
1002	314	0	0	1150	2821	0
1003	0	0	0	0	0	0
1004	464	0	141	0	0	0
1005	0	0	0	0	0	0
1006	1141	0	2334	0	0	0

EMM - DS1 - Southbound Closure

AM	1001	1002	1003	1004	1005	1006
1001	0	0	603	851	358	0
1002	223	0	0	741	3054	0
1003	0	0	0	0	0	0
1004	290	0	415	0	0	0
1005	0	0	0	0	0	0
1006	1160	0	2613	0	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	320	605	329	0
1002	239	0	0	884	2494	0
1003	0	0	0	0	0	0
1004	269	0	208	0	0	0
1005	0	0	0	0	0	0
1006	859	0	1876	0	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	641	56	703	0
1002	292	0	0	1155	2860	0
1003	0	0	0	0	0	0
1004	457	0	211	0	0	0
1005	0	0	0	0	0	0
1006	1226	0	2485	0	0	0

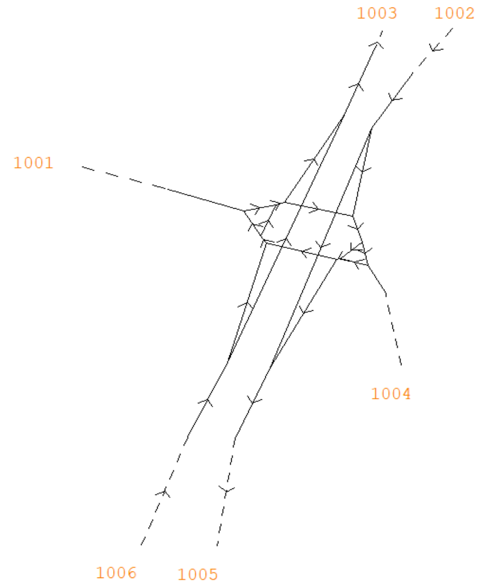
EML - DS2 - Northbound Closure

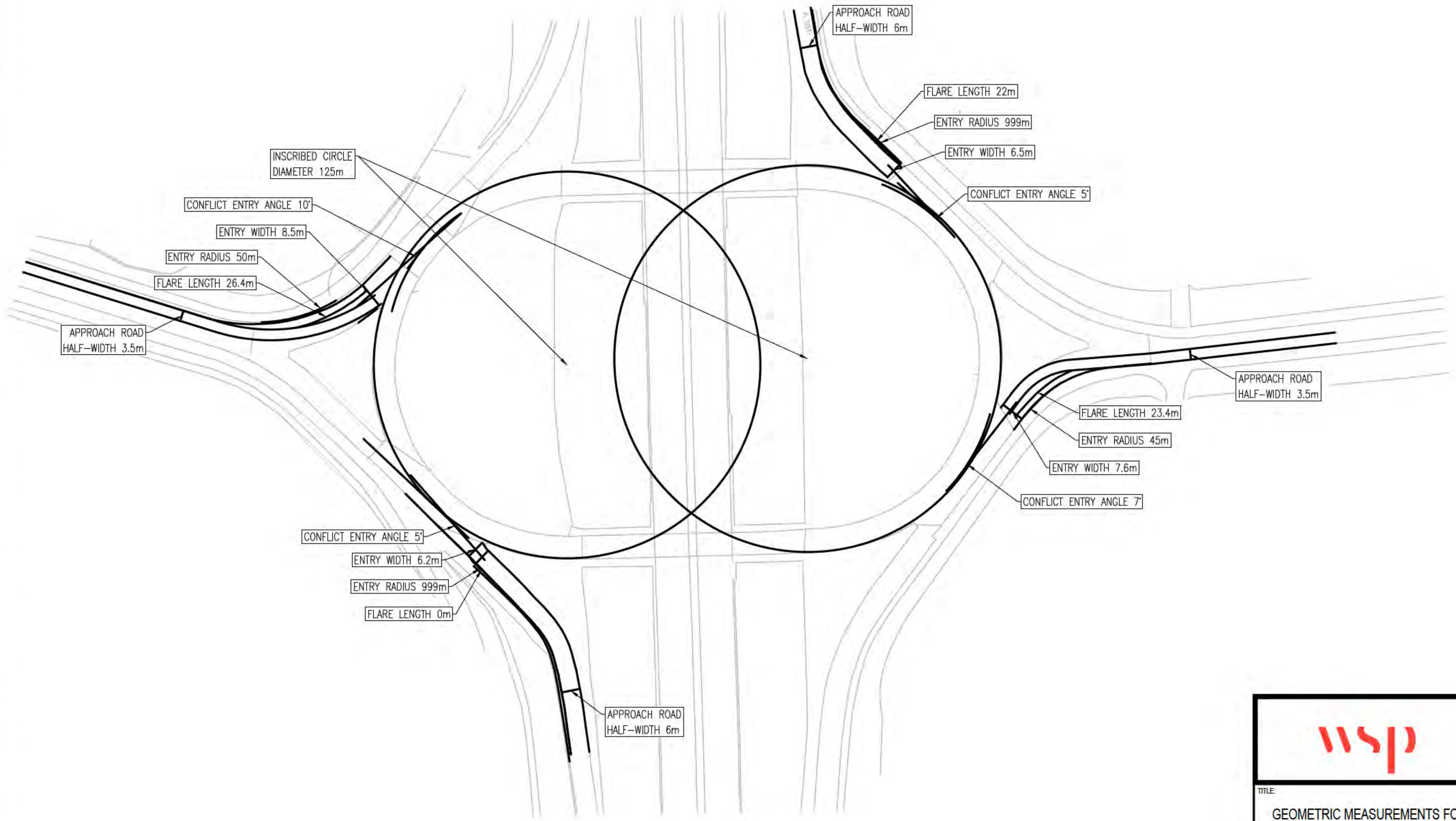
AM	1001	1002	1003	1004	1005	1006
1001	0	0	604	849	360	0
1002	224	0	0	740	3055	0
1003	0	0	0	0	0	0
1004	289	0	416	0	0	0
1005	0	0	0	0	0	0
1006	1154	0	2610	0	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	319	605	324	0
1002	239	0	0	884	2497	0
1003	0	0	0	0	0	0
1004	272	0	208	0	0	0
1005	0	0	0	0	0	0
1006	858	0	1876	0	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	643	58	703	0
1002	290	0	0	1159	2860	0
1003	0	0	0	0	0	0
1004	450	0	211	0	0	0
1005	0	0	0	0	0	0
1006	1233	0	2474	0	0	0

Ref	Arm
1001	B2150 Hulbert Road (west)
1002	A3(M) Southbound Off-slip
1003	A3(M) Northbound On-slip
1004	Hulbert Road (east)
1005	A3(M) Southbound On-slip
1006	A3(M) Northbound Off-slip





SCALE 1:1250 @ A3

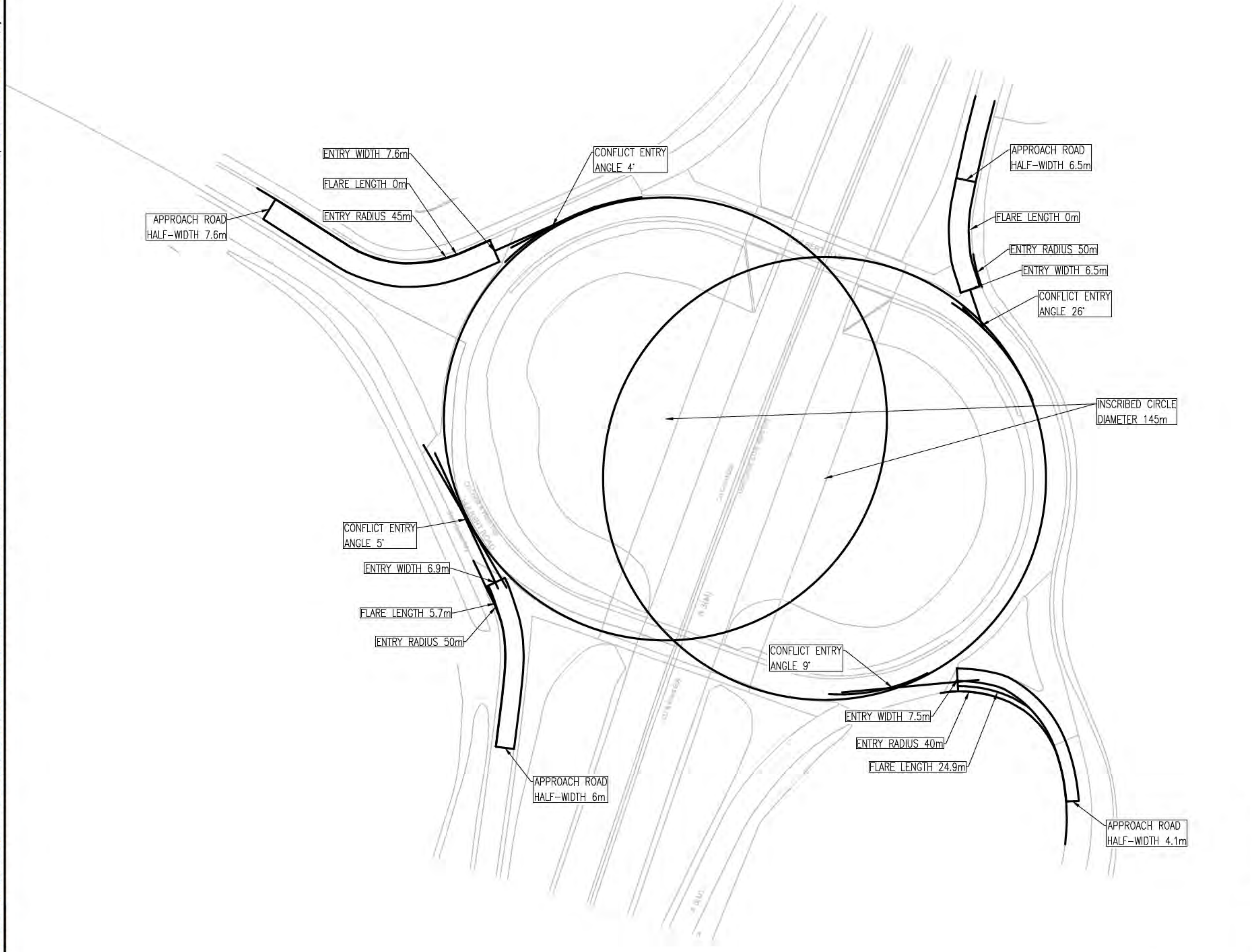
wsp

TITLE:

GEOMETRIC MEASUREMENTS FOR A3(M) JUNCTION 2 MODELLING

FIGURE No:

FIGURE 1



SCALE 1:1250 @ A3

wsp

TITLE:

GEOMETRIC MEASUREMENTS FOR A3(M) JUNCTION 3 MODELLING

FIGURE No:

FIGURE 2

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\62100XXX\62100616 - AQU ND VO NO 3\A DCOID. EIA\5. WP\12. TRAFFIC AND TRANSPORT\S\TRANSPORT ASSESSMENT\DRAWINGS\AUTOCAD\FIGURE 2 DWG, printed on 12 June 2020 13 05 54, by Irvine, Amber

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 2_A3(M).j9
Path: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Data Analysis\Junctions 9
Report generation date: 25/06/2020 16:13:23

»ELM - DM, PM
»EMM - DS1, PM
»EML - DS2, PM

Summary of junction performance

	PM			
	Queue (PCU)	Delay (s)	RFC	LOS
	ELM - DM			
Arm 1	0.7	3.94	0.40	A
Arm 2	7.6	23.08	0.89	C
Arm 3	1.7	3.55	0.61	A
Arm 4	11.5	27.32	0.93	D
	EMM - DS1			
Arm 1	0.9	4.23	0.44	A
Arm 2	20.7	56.64	0.98	F
Arm 3	1.5	3.39	0.58	A
Arm 4	12.5	29.93	0.93	D
	EML - DS2			
Arm 1	0.8	4.19	0.44	A
Arm 2	20.2	55.43	0.98	F
Arm 3	1.5	3.41	0.58	A
Arm 4	12.6	30.33	0.93	D

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

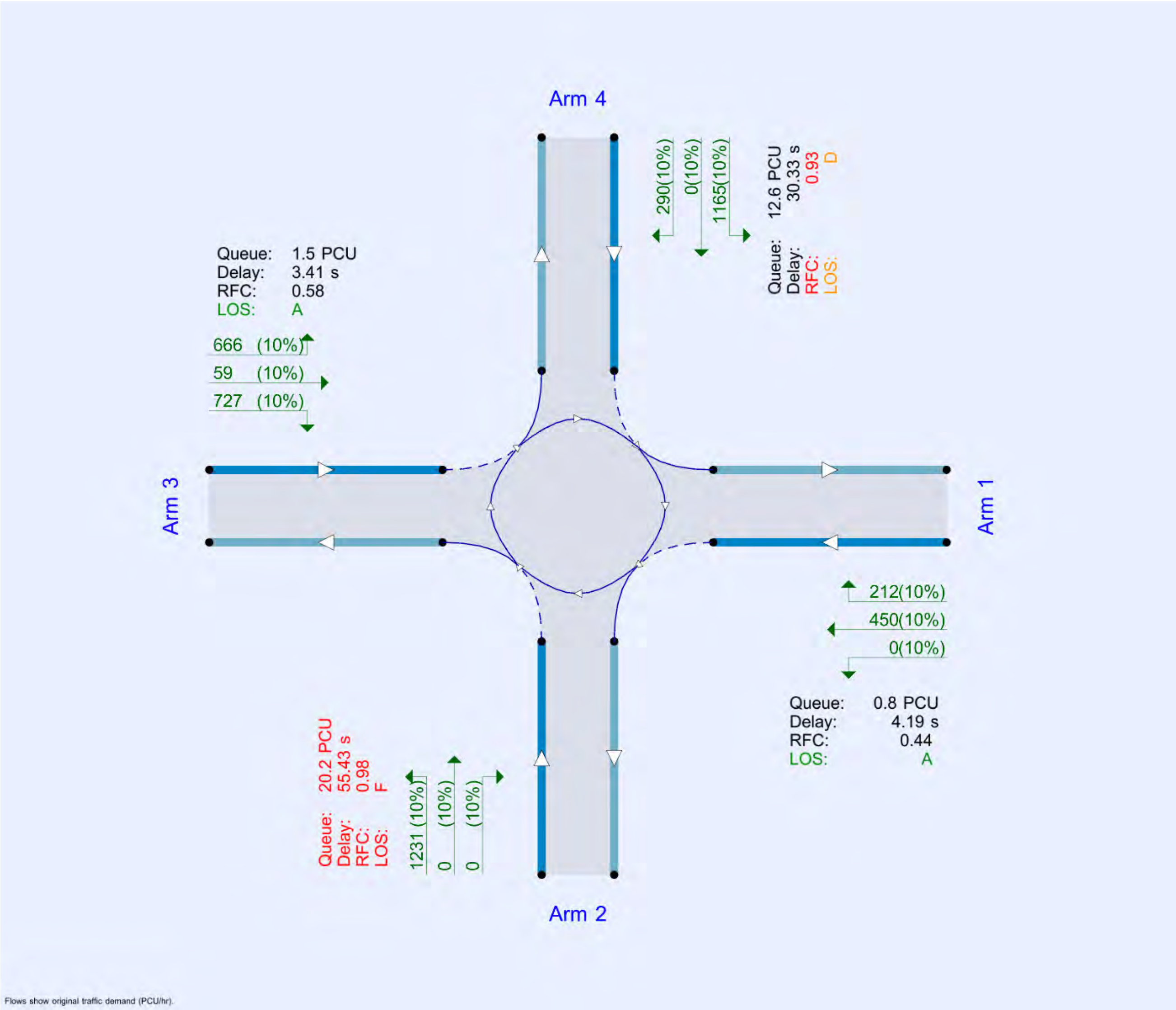
File summary

File Description

Title	Junction 2, A3(M)
Location	
Site number	
Date	26/09/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	62100616
Enumerator	CORP\UKAJT009
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20 00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D2	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓
D4	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓
D6	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

ELM - DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	15.54	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Dell Piece East	
2	A3(M) south	
3	B2149 Dell Piece West	
4	A3(M) north	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.50	7.60	23.4	45.0	125.0	7.0	
2	6.00	6.20	0.1	999.0	125.0	5.0	
3	3.50	8.50	26.4	50.0	125.0	10 0	
4	6.00	6.50	22.0	999.0	125.0	5.0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.891	2671
2	0.914	2342
3	1.100	3017
4	0.994	2574

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D2	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	605	100.000
2		ONE HOUR	✓	1139	100.000
3		ONE HOUR	✓	1573	100.000
4		ONE HOUR	✓	1470	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	464	141
	2	0	0	1139	0
	3	52	703	0	818
	4	1154	1	315	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.40	3.94	0.7	A	555	833
2	0.89	23 08	7.6	C	1045	1568
3	0.61	3.55	1.7	A	1443	2165
4	0.93	27 32	11.5	D	1349	2023

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	455	114	765	1989	0.229	454	904	0.0	0.3	2.577	A
2	857	214	690	1711	0.501	853	529	0.0	1.1	4.594	A
3	1184	296	106	2901	0.408	1181	1437	0.0	0.8	2.299	A
4	1107	277	567	2011	0.550	1101	720	0.0	1.3	4.331	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	544	136	915	1856	0.293	543	1081	0.3	0.5	3.015	A
2	1024	256	826	1587	0.645	1020	632	1.1	2.0	6.945	A
3	1414	354	127	2878	0.491	1413	1719	0.8	1.1	2.700	A
4	1321	330	678	1900	0.696	1317	861	1.3	2.5	6.740	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	666	167	1114	1678	0.397	665	1303	0.5	0.7	3 905	A
2	1254	314	1005	1423	0.881	1234	774	2.0	6.9	19.282	C
3	1732	433	155	2847	0.608	1729	2085	1.1	1.7	3 536	A
4	1619	405	830	1749	0.925	1588	1054	2.5	10.2	21.387	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	666	167	1121	1672	0.398	666	1324	0.7	0.7	3 936	A
2	1254	314	1012	1417	0.885	1251	775	6.9	7.6	23.076	C
3	1732	433	155	2847	0.608	1732	2108	1.7	1.7	3 551	A
4	1619	405	831	1748	0.926	1613	1056	10.2	11.5	27.318	D

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	544	136	925	1847	0.295	545	1112	0.7	0.5	3.043	A
2	1024	256	836	1578	0.649	1046	634	7.6	2.1	7.742	A
3	1414	354	127	2878	0.491	1417	1755	1.7	1.1	2.716	A
4	1321	330	680	1898	0.696	1357	864	11.5	2.6	7.787	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	455	114	769	1986	0.229	456	912	0.5	0.3	2.589	A
2	857	214	694	1707	0.502	861	531	2.1	1.1	4.701	A
3	1184	296	106	2900	0.408	1185	1449	1.1	0.8	2.312	A
4	1107	277	569	2009	0.551	1112	723	2.6	1.4	4.439	A

EMM - DS1, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	25.17	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D4	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	668	100.000
2		ONE HOUR	✓	1226	100.000
3		ONE HOUR	✓	1448	100.000
4		ONE HOUR	✓	1455	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	456	212
	2	0	0	1226	0
	3	57	727	0	664
	4	1163	0	292	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.44	4.23	0.9	A	613	919
2	0.98	56 64	20.7	F	1125	1687
3	0.58	3.39	1.5	A	1329	1993
4	0.93	29 93	12.5	D	1335	2003

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	503	126	765	1989	0.253	501	914	0.0	0.4	2.659	A
2	923	231	720	1684	0.548	918	546	0.0	1.3	5.137	A
3	1090	273	159	2842	0.384	1087	1479	0.0	0.7	2.254	A
4	1095	274	589	1989	0.551	1090	658	0.0	1.3	4.381	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	601	150	915	1856	0.324	600	1093	0.4	0.5	3.151	A
2	1102	276	861	1554	0.709	1097	653	1.3	2.6	8.563	A
3	1302	325	190	2808	0.464	1301	1768	0.7	0.9	2.626	A
4	1308	327	704	1874	0.698	1303	787	1.3	2.5	6.885	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	735	184	1114	1678	0.438	734	1316	0.5	0.9	4.189	A
2	1350	337	1049	1383	0.976	1299	799	2.6	15.3	35.323	E
3	1594	399	233	2761	0.577	1592	2115	0.9	1.5	3 382	A
4	1602	400	862	1717	0.933	1568	963	2.5	10.9	22.812	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	735	184	1121	1672	0.440	735	1338	0.9	0.9	4 226	A
2	1350	337	1056	1377	0.980	1328	800	15.3	20.7	56.637	F
3	1594	399	233	2761	0.578	1594	2151	1.5	1.5	3 394	A
4	1602	400	863	1716	0.934	1596	964	10.9	12.5	29.929	D

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	601	150	925	1846	0.325	602	1128	0.9	0.5	3.186	A
2	1102	276	872	1545	0.714	1173	655	20.7	2.8	12.695	B
3	1302	325	191	2807	0.464	1304	1855	1.5	1.0	2 637	A
4	1308	327	706	1872	0.699	1347	789	12.5	2.6	8 093	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	503	126	769	1986	0.253	504	923	0.5	0.4	2.674	A
2	923	231	724	1680	0.550	929	548	2.8	1.4	5.315	A
3	1090	273	160	2842	0.384	1091	1494	1.0	0.7	2.265	A
4	1095	274	591	1987	0.551	1100	660	2.6	1.4	4.493	A

EML - DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	25.02	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D6	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	662	100.000
2		ONE HOUR	✓	1231	100.000
3		ONE HOUR	✓	1452	100.000
4		ONE HOUR	✓	1455	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	450	212
	2	0	0	1231	0
	3	59	727	0	666
	4	1165	0	290	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.44	4.19	0.8	A	607	911
2	0.98	55.43	20.2	F	1130	1694
3	0.58	3.41	1.5	A	1332	1999
4	0.93	30 33	12.6	D	1335	2003

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	498	125	763	1991	0.250	497	917	0.0	0.4	2.648	A
2	927	232	714	1689	0.549	921	546	0.0	1.3	5.125	A
3	1093	273	159	2842	0.385	1090	1477	0.0	0.7	2.258	A
4	1095	274	590	1987	0.551	1090	659	0.0	1.3	4.389	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	595	149	913	1857	0.320	595	1097	0.4	0.5	3.133	A
2	1107	277	854	1561	0.709	1102	653	1.3	2.6	8.526	A
3	1305	326	190	2808	0.465	1304	1765	0.7	1.0	2.632	A
4	1308	327	706	1872	0.699	1303	789	1.3	2.5	6.904	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	729	182	1112	1680	0.434	728	1320	0.5	0.8	4.153	A
2	1355	339	1040	1391	0.974	1305	799	2.6	15.1	34.816	D
3	1599	400	233	2761	0.579	1596	2112	1.0	1.5	3 395	A
4	1602	400	864	1715	0.934	1568	965	2.5	11.0	23.020	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	729	182	1118	1674	0.435	729	1342	0.8	0.8	4.188	A
2	1355	339	1047	1385	0.979	1335	800	15.1	20.2	55.434	F
3	1599	400	233	2761	0.579	1599	2148	1.5	1.5	3.407	A
4	1602	400	865	1714	0.935	1595	967	11.0	12.6	30.330	D

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	595	149	923	1848	0.322	596	1133	0.8	0.5	3.166	A
2	1107	277	865	1551	0.713	1176	655	20.2	2.8	12.501	B
3	1305	326	191	2807	0.465	1307	1850	1.5	1.0	2 645	A
4	1308	327	708	1871	0.699	1348	791	12.6	2.6	8.141	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	498	125	767	1987	0.251	499	926	0.5	0.4	2.661	A
2	927	232	718	1685	0.550	933	548	2.8	1.4	5.302	A
3	1093	273	160	2842	0.385	1094	1491	1.0	0.7	2.269	A
4	1095	274	592	1985	0.552	1100	662	2.6	1.4	4.499	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: Junction 3_A3(M).j9
Path: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Data Analysis\Junctions 9
Report generation date: 25/06/2020 16:15:39

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	ELM - DM							
Arm 1	0.6	2.99	0.35	A	0.7	3.65	0.38	A
Arm 2	3.0	9.28	0.73	A	3.9	11.58	0.79	B
Arm 3	2.6	4.72	0.71	A	1.3	2.70	0.54	A
Arm 4	7.7	27.22	0.89	D	29.3	65.28	1.00	F
	EMM - DS1							
Arm 1	0.6	2.97	0.37	A	0.8	3.84	0.42	A
Arm 2	4.5	12.97	0.81	B	6.8	19.00	0.87	C
Arm 3	2.6	4.72	0.70	A	1.1	2.53	0.50	A
Arm 4	5.6	19.99	0.85	C	25.5	58.61	0.99	F
	EML - DS2							
Arm 1	0.6	2.97	0.37	A	0.8	3.80	0.41	A
Arm 2	4.4	12.74	0.80	B	6.8	18.83	0.87	C
Arm 3	2.6	4.73	0.70	A	1.1	2.54	0.50	A
Arm 4	5.6	19.99	0.85	C	26.4	60.21	0.99	F

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

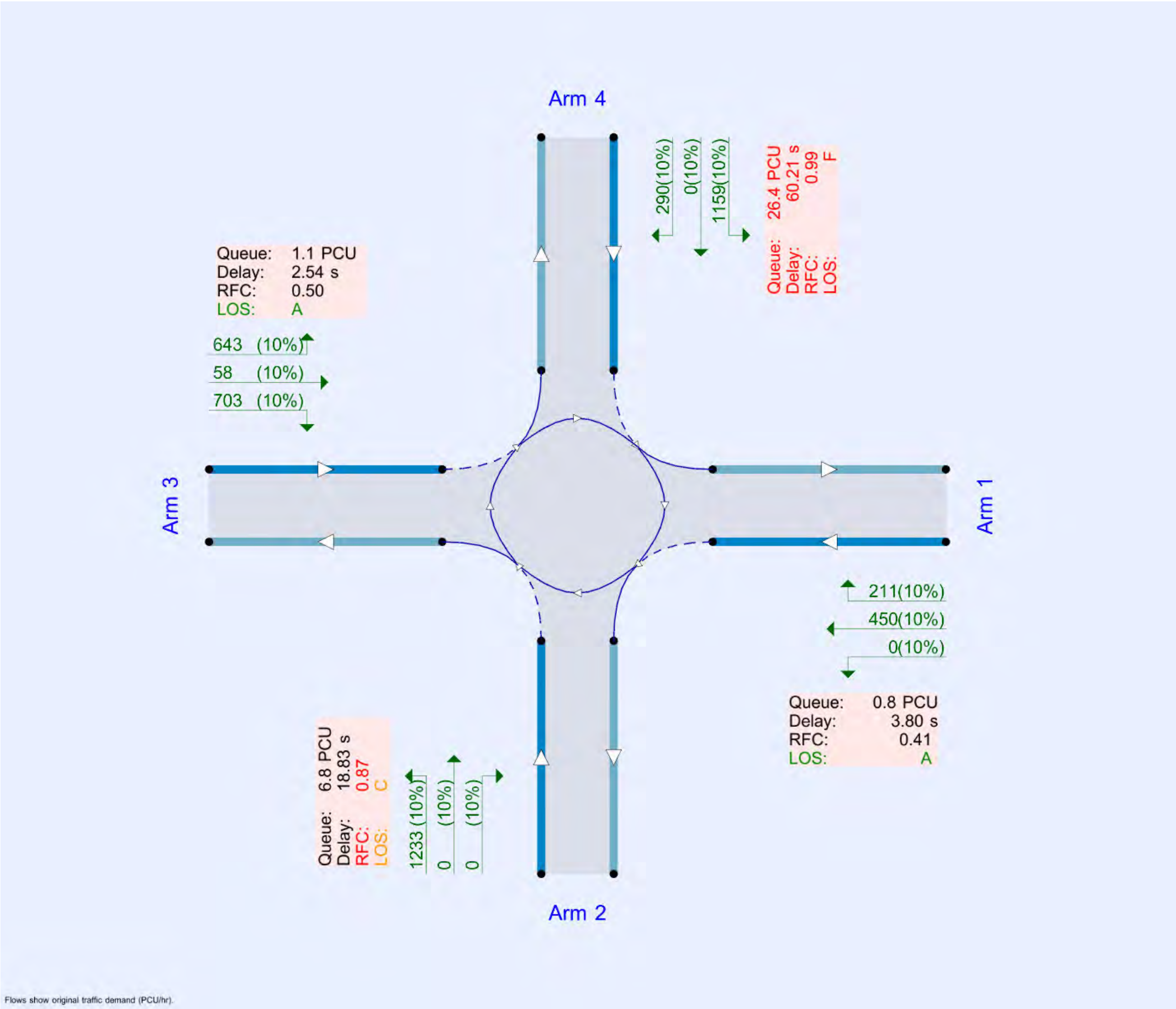
File summary

File Description

Title	Junction 3, A3(M)
Location	
Site number	
Date	26/09/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	62100616
Enumerator	CORP\UKAJT009
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20 00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D1	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓
D2	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓
D3	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓
D4	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓
D5	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓
D6	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

ELM - DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	10.42	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Hulbert Road east	
2	A3(M) south	
3	Hulbert Road west	
4	A3(M) north	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	4.10	7.50	24.9	40.0	145.0	9.0	
2	6.00	6.90	5.7	50.0	145.0	5.0	
3	7.60	7.60	0.0	45.0	145.0	4.0	
4	6.50	6.50	0.0	50.0	145.0	26 0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.762	2597
2	0.951	2551
3	1.208	3386
4	0.716	2207

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D1	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	661	100.000
2		ONE HOUR	✓	1063	100.000
3		ONE HOUR	✓	1826	100.000
4		ONE HOUR	✓	985	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	257	404
	2	0	0	1063	0
	3	853	399	0	574
	4	733	0	252	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.35	2.99	0.6	A	607	910
2	0.73	9.28	3.0	A	975	1463
3	0.71	4.72	2.6	A	1676	2513
4	0.89	27 22	7.7	D	904	1356

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	498	124	488	2225	0.224	496	1189	0.0	0.3	2.290	A
2	800	200	685	1900	0.421	797	300	0.0	0.8	3.580	A
3	1375	344	303	3019	0.455	1371	1179	0.0	0.9	2.398	A
4	742	185	940	1535	0.483	737	734	0.0	1.0	4.944	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	594	149	584	2152	0.276	594	1422	0.3	0.4	2.541	A
2	956	239	820	1772	0.539	954	358	0.8	1.3	4.824	A
3	1642	410	363	2947	0.557	1640	1410	0.9	1.4	3.024	A
4	885	221	1124	1403	0.631	882	878	1.0	1.8	7.558	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	728	182	710	2056	0.354	727	1729	0.4	0.6	2 979	A
2	1170	293	999	1601	0.731	1164	438	1.3	2.9	8 929	A
3	2010	503	444	2849	0.706	2006	1719	1.4	2.6	4 668	A
4	1085	271	1375	1223	0.887	1064	1075	1.8	7.0	22.463	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	728	182	716	2051	0.355	728	1744	0.6	0.6	2 991	A
2	1170	293	1004	1596	0.733	1170	439	2.9	3.0	9 279	A
3	2010	503	445	2848	0.706	2010	1730	2.6	2.6	4.723	A
4	1085	271	1378	1221	0.888	1082	1077	7.0	7.7	27.220	D

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	594	149	592	2146	0.277	595	1445	0.6	0.4	2.556	A
2	956	239	827	1765	0.542	962	360	3.0	1.3	4.974	A
3	1642	410	364	2947	0.557	1646	1426	2.6	1.4	3.058	A
4	885	221	1129	1399	0.633	909	881	7.7	1.9	8.433	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	498	124	491	2222	0.224	498	1198	0.4	0.3	2.296	A
2	800	200	689	1896	0.422	802	301	1.3	0.8	3.624	A
3	1375	344	304	3018	0.455	1377	1187	1.4	0.9	2.416	A
4	742	185	944	1532	0.484	745	737	1.9	1.0	5.057	A

ELM - DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	24.09	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D2	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	605	100.000
2		ONE HOUR	✓	1141	100.000
3		ONE HOUR	✓	1573	100.000
4		ONE HOUR	✓	1464	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	464	141
	2	0	0	1141	0
	3	52	703	0	818
	4	1150	0	314	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.38	3.65	0.7	A	555	833
2	0.79	11 58	3.9	B	1047	1571
3	0.54	2.70	1.3	A	1443	2165
4	1.00	65 28	29.3	F	1343	2015

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	455	114	763	2015	0.226	454	899	0.0	0.3	2.534	A
2	859	215	689	1896	0.453	855	528	0.0	0.9	3.793	A
3	1184	296	106	3258	0.363	1182	1439	0.0	0.6	1.905	A
4	1102	276	567	1801	0.612	1095	720	0.0	1.7	5.556	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	544	136	912	1902	0.286	543	1075	0.3	0.4	2.915	A
2	1026	256	824	1768	0.580	1023	632	0.9	1.5	5.304	A
3	1414	354	127	3233	0.437	1413	1721	0.6	0.9	2.175	A
4	1316	329	678	1722	0.764	1309	862	1.7	3.4	9.441	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	666	167	1104	1756	0.379	665	1269	0.4	0.7	3 628	A
2	1256	314	996	1604	0.783	1247	773	1.5	3.8	10.829	B
3	1732	433	155	3199	0.541	1730	2088	0.9	1.3	2 693	A
4	1612	403	830	1613	0.999	1543	1055	3.4	20.7	38.476	E

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	666	167	1112	1749	0.381	666	1297	0.7	0.7	3 654	A
2	1256	314	1004	1596	0.787	1256	774	3.8	3.9	11.577	B
3	1732	433	155	3198	0.542	1732	2105	1.3	1.3	2 699	A
4	1612	403	831	1612	1.000	1578	1056	20.7	29.3	65.285	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	544	136	937	1883	0.289	545	1161	0.7	0.4	2 960	A
2	1026	256	849	1744	0.588	1035	633	3.9	1.6	5 656	A
3	1414	354	127	3232	0.437	1416	1757	1.3	0.9	2.183	A
4	1316	329	680	1721	0.765	1418	863	29.3	3.8	17.362	C

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	455	114	768	2012	0.226	456	911	0.4	0.3	2.545	A
2	859	215	694	1891	0.454	862	530	1.6	0.9	3.855	A
3	1184	296	106	3257	0.364	1185	1450	0.9	0.6	1.913	A
4	1102	276	569	1800	0.612	1110	723	3.8	1.8	5.805	A

EMM - DS1, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	9 69	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D3	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	705	100.000
2		ONE HOUR	✓	1160	100.000
3		ONE HOUR	✓	1812	100.000
4		ONE HOUR	✓	964	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	290	415
	2	0	0	1160	0
	3	851	358	0	603
	4	741	0	223	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.37	2.97	0.6	A	647	970
2	0.81	12 97	4.5	B	1064	1597
3	0.70	4.72	2.6	A	1663	2494
4	0.85	19 99	5.6	C	885	1327

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	531	133	436	2265	0.234	529	1194	0.0	0.3	2.281	A
2	873	218	696	1889	0.462	870	269	0.0	0.9	3.870	A
3	1364	341	312	3009	0.453	1361	1254	0.0	0.9	2.397	A
4	726	181	908	1558	0.466	722	764	0.0	1.0	4.718	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	634	158	521	2200	0.288	633	1428	0.3	0.4	2.528	A
2	1043	261	833	1759	0.593	1040	321	0.9	1.6	5.489	A
3	1629	407	373	2935	0.555	1627	1501	0.9	1.4	3.023	A
4	867	217	1086	1430	0.606	864	914	1.0	1.7	6.954	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	776	194	635	2113	0.367	775	1739	0.4	0.6	2 960	A
2	1277	319	1018	1584	0.806	1266	393	1.6	4.3	12.088	B
3	1995	499	456	2834	0.704	1990	1827	1.4	2.6	4 664	A
4	1061	265	1328	1257	0.844	1047	1119	1.7	5.3	17.744	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	776	194	639	2110	0.368	776	1752	0.6	0.6	2 969	A
2	1277	319	1021	1580	0.808	1276	394	4.3	4.5	12.973	B
3	1995	499	457	2834	0.704	1995	1841	2.6	2.6	4.719	A
4	1061	265	1331	1255	0.846	1060	1121	5.3	5.6	19.995	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	634	158	527	2195	0.289	635	1445	0.6	0.4	2.537	A
2	1043	261	839	1754	0.595	1054	323	4.5	1.6	5.749	A
3	1629	407	374	2935	0.555	1634	1519	2.6	1.4	3.057	A
4	867	217	1090	1427	0.607	882	917	5.6	1.7	7.467	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	531	133	438	2263	0.235	531	1202	0.4	0.3	2.287	A
2	873	218	700	1886	0.463	876	270	1.6	1.0	3.933	A
3	1364	341	313	3008	0.454	1366	1263	1.4	0.9	2.415	A
4	726	181	911	1555	0.467	729	767	1.7	1.0	4.809	A

EMM - DS1, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	24.09	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D4	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	668	100.000
2		ONE HOUR	✓	1226	100.000
3		ONE HOUR	✓	1400	100.000
4		ONE HOUR	✓	1447	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	457	211
	2	0	0	1226	0
	3	56	703	0	641
	4	1155	0	292	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.42	3.84	0.8	A	613	919
2	0.87	19 00	6.8	C	1125	1687
3	0.50	2.53	1.1	A	1285	1927
4	0.99	58 61	25.5	F	1328	1992

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	503	126	747	2028	0.248	501	906	0.0	0.4	2.592	A
2	923	231	720	1867	0.494	919	528	0.0	1.1	4.159	A
3	1054	263	158	3195	0.330	1052	1480	0.0	0.5	1.846	A
4	1089	272	570	1799	0.605	1083	640	0.0	1.7	5.477	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	601	150	893	1917	0.313	600	1083	0.4	0.5	3.005	A
2	1102	276	861	1732	0.636	1099	632	1.1	1.9	6.218	A
3	1259	315	190	3157	0.399	1258	1771	0.5	0.7	2.084	A
4	1301	325	682	1719	0.757	1294	765	1.7	3.3	9.179	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	735	184	1082	1772	0.415	734	1284	0.5	0.8	3 812	A
2	1350	337	1043	1559	0.866	1332	773	1.9	6.2	16.361	C
3	1541	385	232	3106	0.496	1540	2144	0.7	1.1	2 527	A
4	1593	398	835	1610	0.990	1531	937	3.3	18.8	35.944	E

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	735	184	1090	1766	0.416	735	1312	0.8	0.8	3 841	A
2	1350	337	1051	1551	0.870	1348	774	6.2	6.8	19.004	C
3	1541	385	232	3105	0.496	1541	2167	1.1	1.1	2 531	A
4	1593	398	836	1609	0.990	1566	938	18.8	25.5	58.609	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	601	150	913	1901	0.316	602	1159	0.8	0.5	3 048	A
2	1102	276	882	1713	0.643	1121	633	6.8	2.0	6 899	A
3	1259	315	190	3156	0.399	1260	1813	1.1	0.7	2 089	A
4	1301	325	683	1718	0.757	1389	767	25.5	3.6	15.095	C

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	503	126	751	2025	0.248	503	918	0.5	0.4	2.605	A
2	923	231	725	1862	0.496	927	530	2.0	1.1	4.251	A
3	1054	263	159	3194	0.330	1055	1493	0.7	0.5	1.853	A
4	1089	272	572	1798	0.606	1097	642	3.6	1.7	5.708	A

EML - DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	9.63	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	705	100.000
2		ONE HOUR	✓	1154	100.000
3		ONE HOUR	✓	1813	100.000
4		ONE HOUR	✓	964	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	289	416
	2	0	0	1154	0
	3	849	360	0	604
	4	740	0	224	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.37	2.97	0.6	A	647	970
2	0.80	12.74	4.4	B	1059	1588
3	0.70	4.73	2.6	A	1664	2495
4	0.85	19 99	5.6	C	885	1327

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	531	133	438	2263	0.235	529	1192	0.0	0.3	2.283	A
2	869	217	697	1888	0.460	865	270	0.0	0.9	3.856	A
3	1365	341	312	3008	0.454	1361	1250	0.0	0.9	2.399	A
4	726	181	908	1558	0.466	722	766	0.0	1.0	4.718	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	634	158	524	2198	0.288	633	1425	0.3	0.4	2.531	A
2	1037	259	834	1758	0.590	1035	323	0.9	1.6	5.456	A
3	1630	407	374	2934	0.555	1628	1495	0.9	1.4	3.027	A
4	867	217	1086	1430	0.606	864	916	1.0	1.7	6.954	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	776	194	639	2110	0.368	775	1736	0.4	0.6	2 965	A
2	1271	318	1019	1583	0.803	1260	395	1.6	4.2	11.907	B
3	1996	499	458	2833	0.705	1991	1821	1.4	2.6	4 678	A
4	1061	265	1328	1257	0.844	1047	1121	1.7	5.3	17.743	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	776	194	643	2107	0.368	776	1748	0.6	0.6	2 974	A
2	1271	318	1023	1579	0.805	1270	396	4.2	4.4	12.744	B
3	1996	499	458	2832	0.705	1996	1834	2.6	2.6	4.732	A
4	1061	265	1331	1255	0.846	1060	1123	5.3	5.6	19.995	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	634	158	530	2193	0.289	635	1443	0.6	0.4	2.543	A
2	1037	259	840	1753	0.592	1048	325	4.4	1.6	5.704	A
3	1630	407	374	2933	0.556	1635	1514	2.6	1.4	3.062	A
4	867	217	1090	1427	0.607	882	919	5.6	1.7	7.467	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	531	133	441	2261	0.235	531	1199	0.4	0.3	2.291	A
2	869	217	701	1885	0.461	871	271	1.6	0.9	3.916	A
3	1365	341	313	3007	0.454	1367	1259	1.4	0.9	2.418	A
4	726	181	911	1555	0.467	729	769	1.7	1.0	4.811	A

EML - DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	24.55	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)	Run automatically
D6	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	661	100.000
2		ONE HOUR	✓	1233	100.000
3		ONE HOUR	✓	1404	100.000
4		ONE HOUR	✓	1449	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	0	450	211
	2	0	0	1233	0
	3	58	703	0	643
	4	1159	0	290	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.41	3.80	0.8	A	607	910
2	0.87	18 83	6.8	C	1131	1697
3	0.50	2.54	1.1	A	1288	1933
4	0.99	60 21	26.4	F	1330	1994

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	498	124	745	2029	0.245	496	911	0.0	0.4	2.581	A
2	928	232	713	1873	0.496	924	528	0.0	1.1	4.154	A
3	1057	264	158	3195	0.331	1055	1479	0.0	0.5	1.848	A
4	1091	273	572	1798	0.607	1084	641	0.0	1.7	5.497	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	594	149	891	1918	0.310	594	1089	0.4	0.5	2.988	A
2	1108	277	853	1740	0.637	1105	632	1.1	1.9	6.204	A
3	1262	316	190	3157	0.400	1261	1769	0.5	0.7	2.088	A
4	1303	326	684	1718	0.758	1296	767	1.7	3.3	9.242	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	728	182	1080	1774	0.410	727	1289	0.5	0.8	3.777	A
2	1358	339	1033	1569	0.865	1340	773	1.9	6.2	16.240	C
3	1546	386	232	3106	0.498	1544	2142	0.7	1.1	2 534	A
4	1595	399	837	1608	0.992	1532	939	3.3	19.2	36.570	E

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	728	182	1088	1768	0.412	728	1317	0.8	0.8	3 805	A
2	1358	339	1041	1561	0.870	1355	774	6.2	6.8	18.833	C
3	1546	386	232	3105	0.498	1546	2164	1.1	1.1	2 539	A
4	1595	399	838	1608	0.992	1567	940	19.2	26.4	60.214	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	594	149	912	1902	0.312	595	1167	0.8	0.5	3 031	A
2	1108	277	874	1720	0.644	1127	633	6.8	2.0	6 888	A
3	1262	316	190	3156	0.400	1264	1812	1.1	0.7	2 093	A
4	1303	326	685	1717	0.759	1394	769	26.4	3.6	15.575	C

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	498	124	749	2026	0.246	498	922	0.5	0.4	2.592	A
2	928	232	718	1869	0.497	932	530	2.0	1.1	4.244	A
3	1057	264	159	3194	0.331	1058	1491	0.7	0.5	1.853	A
4	1091	273	573	1797	0.607	1099	643	3.6	1.7	5.731	A

Appendix 4 – SRTM Forecast Link Flows (DM, DS1 & DS2)

Junction	Slip Road	LINK_ID	Link Flows													
			AM Peak Hour							PM Peak Hour						
			Scenario			Absolute change		Percentage Change		Scenario			Absolute change		Percentage Change	
			DM	DS1	DS2	DS1 vs DM	DS2 Vs DM	DS1 vs DM	DS2 vs DM	DM	DS1	DS2	DS1 vs DM	DS2 vs DM	DS1 vs DM	DS2 vs DM
M27 Junction 12 grade separated trumpet interchange with the M275 Northern Spur to A27 Southampton Road and Cosham	East to North off-slip (onto M275 Northern Spur from M27 eastbound)	57743_57735	2141	2156	2168	15	27	0.7%	1.3%	1450	1451	1453	1	2	0.05%	0.2%
	North to West on-slip (onto M27 westbound from M275 Northern Spur)	57735_58736	1894	1885	1868	-9	-25	-0.5%	-1.3%	1841	1840	1847	-1	6	-0.05%	0.2%
	North to South on-slip (from M275 Northern Spur to M275 southbound towards Portsmouth)	57735_57736	587	624	610	37	23	6.3%	3.9%	924	960	945	36	21	3.9%	2.3%
	South to North off-slip (from M275 northbound onto M275 Northern Spur towards Cosham)	58739_58735	617	622	600	5	-17	0.8%	-2.8%	752	747	738	-5	-14	-0.7%	-1.8%
	TOTAL FOR JUNCTION	N.A.	5239	5287	5246	48	8	0.9%	0.1%	4967	4998	4983	31	16	0.6%	0.3%
M27 Junction 12 grade separated full directional triangle interchange with the M275 to A3 Mile End Road and Portsmouth	West to south off-slip (from M27 eastbound onto M275 southbound towards Portsmouth)	57734_57736	1985	1995	1970	10	-15	0.5%	-0.7%	2425	2452	2416	27	-9	1.1%	-0.4%
	South to west on-slip (from M275 northbound onto M27 westbound)	58739_58744	2251	2252	2246	1	-6	0.05%	-0.2%	2475	2474	2471	-1	-4	-0.02%	-0.2%
	South to east on-slip (from M275 northbound onto M27 eastbound)	58740_57832	2179	2154	2213	-26	34	-1.2%	1.6%	1945	1951	1962	6	18	0.3%	0.9%
	East to south off-slip (from M27 westbound onto M275 southbound towards Portsmouth)	58231_58242	1549	1552	1537	3	-12	0.2%	-0.8%	1163	1252	1153	89	-10	7.7%	-0.9%
	TOTAL FOR JUNCTION	N.A.	7965	7953	7967	-12	2	-0.1%	0.0%	8008	8129	8003	121	-5	1.5%	-0.1%
A27 Havant Bypass / Portsbridge Roundabout Limited Access Junction	A27 Western Road approach	57521_57846	1289	1268	1269	-21	-20	-1.6%	-1.5%	1661	1658	1654	-3	-7	-0.2%	-0.4%
	A397 Northern Road approach	57840_57836	1490	1525	1497	34	6	2.3%	0.4%	1547	1602	1589	55	42	3.6%	2.7%
	Eastbound on-slip	57838_57852	1083	1102	1083	19	0	1.7%	0.0%	949	943	952	-5	3	-0.6%	0.3%
	Westbound off-slip	58237_58244	1215	1204	1209	-10	-5	-0.9%	-0.4%	1477	1486	1470	9	-8	0.6%	-0.5%
	A3 London Road approach	58235_58232	2113	2117	2115	4	2	0.2%	0.1%	2071	2043	2080	-28	8	-1.3%	0.4%
	TOTAL FOR JUNCTION	N.A.	7190	7215	7173	25	-17	0.4%	-0.2%	7705	7733	7743	28	39	0.4%	0.5%

A27 Havant Bypass / A2030 Eastern Road Grade Separated Roundabout Junction	A2030 southbound approach	56137_56113	1317	1267	1303	-50	-14	-3.8%	-1.1%	1682	1567	1628	-115	-54	-6.8%	-3.2%
	Eastbound on-slip	56139_56146	1634	1658	1601	24	-33	1.5%	-2.0%	1770	1753	1729	-17	-41	-0.9%	-2.3%
	Westbound off-slip	56140_56114	1767	1745	1754	-22	-13	-1.2%	-0.7%	1581	1492	1601	-89	20	-5.6%	1.3%
	A2030 northbound approach	55335_56112	2091	2096	2045	5	-46	0.2%	-2.2%	2230	2231	2188	1	-42	0.0%	-1.9%
	Westbound on-slip	56133_56131	625	621	651	-4	26	-0.6%	4.2%	878	880	859	2	-18	0.2%	-2.1%
	Eastbound off-slip	56158_56111	1185	1168	1174	-17	-11	-1.4%	-0.9%	1002	933	965	-69	-36	-6.9%	-3.6%
	TOTAL FOR JUNCTION	N.A.	8620	8556	8529	-64	-91	-0.7%	-1.1%	9142	8856	8970	-286	-172	-3.1%	-1.9%
A3(M) Junction 4 (Limited Access)	Northbound off-slip	64636_64621	650	640	640	-11	-10	-1.6%	-1.5%	1353	1204	1193	-150	-160	-11.1%	-11.8%
	Purbrook Way eastbound approach	64335_64621	1397	1387	1379	-10	-19	-0.7%	-1.3%	835	944	955	109	120	13.1%	14.3%
	Purbrook Way westbound approach	60021_60027	1026	1000	1005	-26	-21	-2.6%	-2.0%	975	1035	1032	60	56	6.1%	5.8%
	Southbound on-slip	60021_64635	1409	1407	1399	-3	-10	-0.2%	-0.7%	1002	1029	1041	27	39	2.7%	3.9%
	TOTAL FOR JUNCTION	N.A.	4483	4433	4423	-49	-60	-1.1%	-1.3%	4166	4212	4221	46	55	1.1%	1.3%
A3(M) Junction 5*	Northbound off-slip	59839_59841	368	357	351	-11	-17	-3.1%	-4.6%	522	503	507	-19	-14	-3.6%	-2.8%
	A2030 Havant Road approach	59834_59837	975	969	970	-6	-4	-0.6%	-0.4%	979	998	994	19	15	1.9%	1.5%
	Northbound on-slip	59838_59853	1313	1359	1359	45	45	3.4%	3.5%	1587	1618	1618	31	31	1.9%	1.9%
	Southbound off-slip	59836_59933	1375	1377	1377	1	2	0.1%	0.1%	1405	1416	1415	11	11	0.8%	0.8%
	B2177 Bedhampton Hill approach	59938_59936	657	682	689	25	32	3.8%	4.8%	589	575	573	-14	-16	-2.4%	-2.6%
	Total for junction	N.A.	4689	4743	4746	54	58	1.2%	1.2%	5082	5110	5108	28	26	0.5%	0.5%
Dogbone Dumbbell junction linking A3(M) Junction 5 with A27 Havant Bypass East**	A27 southbound approach	59830_59822	1805	1762	1763	-43	-42	-2.4%	-2.3%	1638	1589	1586	-49	-52	-3.0%	-3.2%
	Eastbound on-slip	59822_59847	782	765	766	-18	-16	-2.2%	-2.1%	926	919	918	-7	-8	-0.8%	0.9%
	Westbound off-slip	59847_59811	938	940	940	2	2	0.2%	0.2%	1108	1185	1164	76	56	6.9%	5.0%
	Harts Farm Way approach	60421_59846	515	515	516	0	1	0.1%	0.2%	524	501	508	-23	-15	-4.4%	-2.9%
	Westbound on-slip	59845_59835	654	654	653	0	-1	-0.05%	-0.1%	451	449	445	-2	-6	-0.5%	-1.4%
	TOTAL FOR JUNCTION	N.A.	4694	4636	4638	-58	-56	-1.2%	-1.2%	4648	4642	4622	-6	-26	-0.1%	-0.6%

*Note there is no southbound on-slip. Instead there is a westbound on-slip at the dumb-bell junction linking the A3(M) Junction 5 with the A27 Havant Bypass East.

**Note there is no westbound on-slip. Instead there is a northbound on-slip at the A3(M) Junction 5

Appendix 7 – Tech Note HE03

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE03 – Response to Highways England Technical Note TN03

The Planning Act 2008

Document Ref: HE03

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note HE03 – Response to Highways England Technical Note TN03

PINS REF.: EN020022

DOCUMENT: HE03

DATE: JANUARY 2021

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	Document Name
Revision	001
Document Owner	WSP UK Limited
Prepared By	S.Gander
Date	25th January 2021
Approved By	C.Williams
Date	25th January 2021

CONTENTS

TABLES

APPENDICES

1. INTRODUCTION

1.1.1.1. This Technical Note (HE03) has been prepared in response to the representation made by AECOM on behalf of Highways England (HE) in relation to the submission documents for the AQUIND Interconnector DCO applications. Comments were made by HE in the document entitled 'Aquind Interconnector – Review WSP TN HE01 & HE02' (HETN03) dated 21st August 2020.

1.1.1.2. HETN03 sets out comments on ten topics, these are as follows:

Topics considered critical to the agreement in principle of the planning application:

- Item 1: Sensitivity test modelling of Junction 2 and 3, A3 (M) in ARCADY using Lane Simulation;
- Item 2: Further work to quantify the impact of Aquind Interconnector in the following scenarios:
  - Without the committed development and without its mitigation; and
  - With the committed development and with its mitigation scheme.

Topics regarded as important but not critical to the agreement in principle of the planning application

- Item 3 and Item 4: Traffic management at Farlington Playing Fields;
- Item 5: Timings of HGV movements;
- Item 6: Collaboration strategy with HE in respect to overlapping construction of schemes;
- Item 7: Further information regarding construction phasing and duration of works;
- Item 8: Further clarification regarding traffic flows;
- Item 9: AM peak modelling of A3 (M), Junction 3; and
- Item 10: Further information regarding traffic flows to / from Hulbert Road East A3 (M), Junction 3.

1.1.1.3. This Technical Note will respond to each of these points,

1.1.1.4. Since the receipt of HETN03, the Applicant has held regular discussions with Highways England and their advisors, AECOM in order to seek to progress outstanding matters. This included the submission of version 001 of this document, which was submitted on 12/11/2020. This further iteration of this document provides further detail as required by Highways England, particularly in relation to matters concerning Junctions 2 and 3 of the A3 (M).

1.1.1.5. Given the above, the structure of this response is as follows:

- Section 2 - Traffic Flows: addresses Item 8 and Item 10 of HETN03 regarding correctness of traffic flows;
- Section 3 - Lane Simulation Sensitivity Tests: addresses Item 1 of HETN03 and includes lane simulation sensitivity tests of both Junction 2 and 3 of A3 (M), accounting for traffic flow amendments set out in Section 2. This Section also includes clarification in response to Item 9;
- Section 4 - Committed Development Assessments: which addresses Item 2 of the HETN03 regarding the impact of committed developments at the junctions, again accounting for the traffic flow amendments set out in Section 2;
- Section 5 – Alternative Future Year Assessments: which, following discussions with HE contains additional assessments of both Junction 2 and Junction 3 of the A3 (M) undertaken on the basis of alternative future year traffic flows;
- Section 6 – Construction Methodology: addressing comments in Items 3, 4, 5, 6 and 7 pertaining to construction methodology, phasing and construction traffic movements; and
- Section 7 – Other Matters: which addresses all other pertinent matters.

1.1.2. HIGHWAYS ENGLAND MODELLING REVIEW

1.1.2.1. This Technical Note (HE03) also takes into account comments made by HE regarding undertaken traffic modelling of both Junction 2 and Junction 3 of A3 (M) in correspondence's correspondence dated 27 November 2020.

1.1.2.2. The recommendations set out by HE's consultants in the aforementioned review are set out below for reference:

Priority Junction Modelling

Junction 2, A3 (M)

"We have reviewed the lane movement and lane levels and suggest the following changes:

- *Arm 2 (A3(M) South) – Level 1 Lane 2 – Lane movement to Arm 3 (B2149 Dell Piece West) should be removed unless there is evidence that drivers actually use the offside lane to make the left turn here or signage is to be provided to encourage them to do so (none appears to be present as of now); and*
- *The storage (PCU) at each lane on arms 1 and 3 should be revised as currently all lanes are coded with a storage of 'infinity': AECOM measure the two-lane section of arm 1 as 35m long, and of arm 3 as 50m long. [This comment does not apply to the two Motorway slip roads which are two lanes throughout]."*

1.1.2.3. The Applicant accepts the comments made by HE at this junction and have updated all modelling to reflect these amendments.

Junction 3, A3 (M)

"We have reviewed the lane movement and lane levels and suggest the following changes:

- *Arm 2 (A3(M) South) – Level 1 Lane 2 – Lane movement to Arm 3 (Hulbert Road West) should be removed for the same reason as given above;*
- *Arm 3 (Hulbert Road West) – Level 1 Lane 1 – Arm 1 (Hulbert Road East) should be included as a destination, since this lane appears to feed traffic into the nearside lane on the bridge; and*
- *Arm 3 (Hulbert Road West) – Level 1 Lane 2 – Arm 1 (Hulbert Road East) and Arm 4 (A3(M) north) should be removed as destinations, since this lane feeds traffic into the offside lane on the bridge."*

1.1.2.4. The Applicant accepts the requested amendments for the Hulbert Road (west) approach of the junction, and the associated modelling has been updated to reflect these.

1.1.2.5. The Applicant does not accept HE's requested removal of the availability of the offside lane of the A3 (M) northbound off-slip for traffic wishing to turn left on to Hulbert Road (west). The use of the offside lane in question for left turners has been found to be commonplace when reviewing existing traffic behaviour at this junction. There are no lane markings advising left turners to remain within the nearside lane of the northbound slip road and Hulbert Road (west) has a dualled two lane exit which continues to the next downstream junction, meaning that left turning vehicles using the offside lane can do so unimpeded and without the need to merge with traffic using the nearside lane. As such, this movement has been retained in all modelling of Junction 3, A3 (M) included within this Technical Note.

Signalised Junction Modelling

Junction 2, A3 (M)

"The model should be revised so that the lane connectors used in the model match the road markings on the drawings provided in HE03 (Committed mitigation scheme). Consequently, the associated connectors should be amended accordingly. Specific examples follow:

- *"Arm 4 (A3(M) southbound off slip): there is a missing connector from lane 4/2 to lane 12/2;*
- *Arm 1 (Dell Piece East): the connector from lane 1/1 to lane 5/1 is incorrect and there should be an additional connector from lane 1/2 to lane 9/2;*
- *Arm 6 (Circulatory West): the connector from lane 6/2 to lane 11/2 is incorrect."*

1.1.2.6. The Applicant accepts the comments made by HE at this junction and have updated all modelling to reflect these amendments.

Junction 3, A3 (M)

"The model should be revised so that the lane connectors used in the model match the road markings on the drawings provided in HE03 (Committed mitigation scheme). Consequently, the associated connectors should be amended accordingly. There is only one specific example at A3(M) J3:

- *Arm 2 (A3(M) northbound off slip): the connector from lane 2/2 to lane 7/2 is incorrect."*

1.1.2.7. The Applicant notes HE's comments regarding the need for the future year traffic modelling to match the proposed scheme design which is set out in Keir drawing entitled 'A3 (M) J3 Northbound Slip S278 Signalisation Scheme' provided at Appendix 5. However, in order to gain a better understanding of how this junction may operate in the future, all assessments of a signalised Junction 3 included in this Technical Note have been undertaken for two different lane alignments on the A3 (M) South approach. These alignments are as follows:

- **Use of the offside lane to turn left prohibited:** In this model, as per the scheme design for this junction created by HE, left turning from the A3 (M) south approach is only permitted via the nearside lane. Use of the offside lane of this approach to turn left is prohibited; and
- **Use of the offside lane to turn left permitted:** In this model, left turning is permitted via both lanes of the A3 (M) south approach. This is in alignment with the current behaviour of traffic which has been observed at this junction, together with the arrangement of this junction.

1.1.2.8. Aside from this differentiation in lane alignment, the two signalised junction models for Junction 3, A3 (M) used for assessment purposes are identical.

2. TRAFFIC FLOWS

2.1. INTRODUCTION

2.1.1.1. Items 8 and 10 of the comments raised HETN03 pertained to the correctness of traffic flow data used within junction capacity assessments for Junction 2 and Junction 3 of the A3 (M).

2.2. ITEM 8 – JUNCTION 2, A3 (M)

2.2.1.1. The recommendation set out in Item 8 pertains both to discrepancies between the traffic flows presented in the modelling outputs and those in the traffic flow diagrams for Junction 2, A3 (M), which were provided in Appendix 3 of HETN02. Item 8 is detailed in paragraph 3.2 of HE03, which is replicated below for ease of reference:

> *"3.2. Based on the calculations undertaken by AECOM, there appear to be some minor discrepancies between the flows found in the flow diagrams and those included in the models. For example the left turn from arm 3 to arm 34 (link 1006 – 1004) is shown as 703 vehicles in the matrix of traffic flows but 727 in the ARCADY model. There are other examples of the same order of magnitude. It is recommended that either the flow diagrams or the models are corrected to ensure that these are consistent, and that clarification is provided. Furthermore, there appear to be no traffic flows from A3(M) south to Dell Piece East, AECOM recommend confirmation that this is correct."*

2.2.1.2. The slight discrepancy between the traffic flows included in the model and those which were presented in the traffic flow diagrams arose from the addition of construction traffic to the model, which had not been replicated in the traffic flow diagrams. Further details relating to the addition of construction traffic at Junction 2, A3 (M) can be found in Section 3 of Technical Note HE02, which was previously submitted to HE by the Applicant. This includes details of the traffic flows from A3(M) south to Dell Piece East.

2.2.1.3. Further investigation into the traffic flows at Junction 2, A3 (M) has found that the SRTM outputs received for this junction were incorrect. The correct turning counts for this junction have been obtained for all modelled scenarios and are provided in Appendix 1 for reference. Construction vehicles have been added to the SRTM data where appropriate, as is detailed in Section 3 of Aquind Technical Note HE02. The corrected traffic flows for Junction 2, A3 (M), with additional construction traffic where appropriate, have been used in for all assessments undertaken in this report.

2.3. ITEM 10 – JUNCTION 3, A3 (M)

2.3.1.1. Item 10 of HE03 concerns the absence of traffic movements between A3 (M) south and Hulbert Road east at Junction 3, A3 (M). Item 10 is replicated below for reference:

> *"With regard to A3(M) Junction 3, there appears to be no flows from A3(M) south to Hulbert Road East, and confirmation should be provided that this is correct"*

2.3.1.2. The absence of traffic flows on these movements were due to nature of the SRTM outputs only. As with Junction 3, A3 (M), the Applicant notes HE's comments regarding these specific SRTM outputs, and as such has included movements between these two arms in all assessments undertaken in this Technical Note. Traffic flows for the missing movements have been calculated using observed data collected from a survey of Junction 3, A3 (M) in September 2019 carried out by the Applicant and included in Appendix 2. The observed 2019 traffic flows are set out in Table 1.

Table 1: 2019 Traffic Survey Traffic Flows (Junction 3, A3 (M))

AM Peak		
From / To	Hulbert Road (east)	A3 (M) (south)
Hulbert Road (east)	-	14
A3 (M) (south)	38	-
PM Peak		
From / To	Hulbert Road (east)	A3 (M) (south)
Hulbert Road (east)	-	43
A3 (M) (south)	17	-

2.3.1.3. TEMPRO growth rates were applied to the recorded 2019 traffic flows set out in Table 1 in order to bring them into alignment with the 2026 assessment year used in the SRTM. The TEMPRO growth rates are set out in Table 2 for the Havant area.

Table 2: 2019 - 2026 TEMPRo Growth rates, Junction 3 A3 (M)

Locality	Growth Rates (2019 – 2026)	
	AM Peak	PM Peak
Havant 006 MSOA	1.102536	1.106028

2.3.1.4. The resultant 2026 forecast traffic flows for this movement are set out in Table 3.

Table 3: 2026 Traffic flows for movements between A3 (M) and Hulbert Road East

AM Peak		
From / To	Hulbert Road (east)	A3 (M) (south)
Hulbert Road (east)	-	15
A3 (M) (south)	42	-
PM Peak		
From / To	Hulbert Road (east)	A3 (M) (south)
Hulbert Road (east)	-	48
A3 (M) (south)	19	-

2.3.1.5. These revised traffic flows for the movement between Hulbert Road East and A3 (M) south which are set out in Table 3 have been used in the Do Minimum (DM) and Do Something (DS) scenarios 1 and 2 in all further assessments of Junction 3, A3 (M) undertaken in this Technical Note and are included in Appendix 3 for reference.

2.4. SUMMARY

2.4.1.1. This section has provided a response to Item 8 and Item 10 of HE03. In respect to Item 8, further investigation into the traffic flows at Junction 2, A3 (M) found them to be incorrect and thus corrected traffic flows for this junction have been provided. This Section has also addressed concerns raised by HE regarding the absence of traffic flow data for the movement between the A3 (M) (south) and Hulbert Road (east) arms of Junction 3, A3 (M). In order to address these concerns, the Applicant has collated observed traffic count data for the missing movements and applied appropriate growth factors as to match the assessment year. The observed traffic flows with growth factors applied have been included in the place of the absent movements in all further assessments of these junctions within this Technical Note.

2.4.1.2. In using these traffic flows the Applicant notes the robust nature of the assessments undertaken within this Technical Note with regards to the total volume of traffic flow assessed as using Junction 2 and 3 of the A3 (M). This is shown in Table 4 below which provides a comparison of traffic flows recorded during the 2019 surveys of each junction and adjusted DM, DS1 and DS2 scenarios.

Table 4: Comparison of Total Traffic Flow Assessed at Junction 2 / 3 of A3 (M)

		AM Peak		
Junction	2019 Traffic Surveys	2026 Assessed DM Scenario	2026 Assessed DS1 Scenario	2026 Assessed DS1 Scenario
A3 (M) Junction 2	2,697	4,007 (+48.6%)	3,989 (+47.9%)	3,985 (+47.8%)
A3 (M) Junction 3	4,095	4,535 (+10.8%)	4,641 (+13.3%)	4,693 (+14.6%)
		PM Peak		
Junction	2019 Traffic Surveys	2026 Assessed DM Scenario	2026 Assessed DS1 Scenario	2026 Assessed DS1 Scenario
A3 (M) Junction 2	3,099	3,914 (+26.3%)	4,097 (+32.2%)	4,094 (+32.1%)
A3 (M) Junction 3	3,892	4,783 (+22.9%)	4,741 (21.2%)	4,747 (+22.0%)

2.4.1.3. The traffic flows in Table 4 highlight the increases in traffic flow at A3 (M) Junction 2 and 3 when compared with the 2019 surveys against the 2026 DM, DS1 and DS2 scenarios. The traffic flows presented for A3 (M) Junction 2 represent significant growth in traffic flow compared to TEMPRO estimates for the period between 2019 and 2026. Whilst the traffic flows presented for A3 (M) Junction 3 do not increase by the same proportions as those identified at A3 (M) Junction 2, they are still beyond those forecast by TEMPRO. Therefore, all assessments contained within this Technical Note are very robust estimates of junction operation and impact of the Proposed Development.

3. LANE SIMULATION MODELLING

3.1. INTRODUCTION

3.1.1.1. This section addresses Item 1 of HE03, which requested additional sensitivity tests be undertaken at both Junction 2 and Junction 3 of the A3 (M), to include the use of lane simulation within ARCADY and incorporating the minor amendments to be included in the junction models as requested by AECOM's correspondence of 27 November 2020. This section provides an assessment of the junctions in their current form, noting the committed capacity improvement schemes for these locations discussed in Section 4 of this Note that may be completed prior to construction of the Onshore Cable Route. In addition, the assessments contained within this section are considered to be very robust on the basis of the following:

- All assessments have been undertaken using traffic flows shown in Table 4, which represent a significant increase when compared against the observed 2019 traffic surveys. This is a result of the traffic growth and committed development assumptions included within the SRTM for the local area;
- The traffic flows include for committed development at Land to the East of Horndean and Old Park Farm, which are required to deliver mitigation schemes at Junctions 2 and 3 of the A3 (M). These mitigation schemes were not included within the SRTM modelling; and
- The DS1 and DS2 scenarios have used a worst-case scenario for the location of traffic management associated with construction of the Onshore Cable Route with temporary traffic signals included on the B2150 Hambledon Road, B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue roundabout and A3 London Road / Ladybridge roundabout. The cumulative effect of this traffic management leads to a high level of traffic re-assignment away from the Onshore Cable Corridor and onto the wider highway network such as A3(M) junctions 2 and 3. However this will not occur due to the programme restrictions contained within the Framework Traffic Management Strategy (FTMS) (REP1-068), which prevents such a traffic management scenario from occurring. With these restrictions in place only one of the three traffic management locations included within the SRTM may take place at any one time.

3.1.1.2. These programme restrictions and FTMS are secured via protective provisions contained in the draft Development Consent Order.

3.2. ITEM 1

3.2.1.1. HE have requested further sensitivity tests are undertaken at both Junction 2 and Junction 3 of A3 (M). The request from HE is set out below:

> *"With regard to A3(M) Junctions 2 and 3, lane simulation should be used within ARCADY as a sensitivity test (paras 3.5 and 3.11) and these sensitivity tests should be undertaken before the results of the modelling are accepted (para 3.7 and 3.14)."*

3.2.1.2. Following this recommendation, as a sensitivity test, further junction modelling was undertaken within ARCADY using lane simulation. The geometric parameters used in these sensitivity tests have not altered from those used in the ARCADY modelling set out in Appendix 3 of Technical Note HE02, as these elements have been previously accepted by Highways England. The traffic flow inputs have been modified in order to provide those details that were absent in the SRTM outputs, as is further detailed in Section 2 of this report.

3.2.1.3. Full outputs of this ARCADY modelling is included within Appendix 4 of this Technical Note.

3.2.2. JUNCTION 2, A3 (M)

3.2.2.1. As is set out in Section 2.2 of this Technical Note, the SRTM outputs which had previously been received by the Applicant for Junction 2, A3 (M) were found to be incorrect. As such all previously submitted assessments for Junction 2, A3 (M) should be taken to be superseded. A revised set of traffic flow diagrams for this junction are provided as part of this response. Specifically, superseded assessments comprise of those included in:

- Table 105, 106 and 107 of the originally submitted Transport Assessment (APP-448);
- Table 32, 33 and 34 of the Supplementary Transport Assessment (REP1-142); and
- Table 4, 5 and 6 of Highways England Technical Note 2 (HE02).

3.2.2.2. For the purpose of completeness, ARCADY assessments have been undertaken using the corrected flows set out in Section 2.2, with the addition of construction traffic in the PM peak in the DS scenarios where appropriate. The revised assessment results are included in Table 5, Table 6, and Table 7, which provide details of the capacity assessment outputs, in terms of forecast vehicle queue lengths represented as Passenger Car Units (PCU), average vehicle delay expressed in seconds and capacity expressed as a Ratio of Flow to Capacity (RFC).

Table 5: 2026 DM AM Junction 2, A3 (M) results

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Dell Piece East	3	12	0.74	3	10	0.67
A3 (M) (south)	2	7	0.61	2	6	0.64
B2149 Dell Piece West	2	4	0.58	4	8	0.75
A3 (M) (north)	5	16	0.80	7	45	0.88

Table 6: 2026 DS1 Junction 2, A3 (M) results

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Dell Piece East	3	12	0.73	2	10	0.65
A3 (M) (south)	2	8	0.63	3	8	0.71
B2149 Dell Piece West	2	4	0.58	4	8	0.78
A3 (M) (north)	6	19	0.83	5	35	0.83

Table 7: 2026 DS2 Junction 2, A3 (M) results

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Dell Piece East	3	12	0.73	2	10	0.65
A3 (M) (south)	2	8	0.63	3	8	0.71
B2149 Dell Piece West	2	4	0.58	4	8	0.78
A3 (M) (north)	6	19	0.83	5	35	0.83

3.2.2.3. The results set out for the AM peak demonstrate that all arms of Junction 2, A3 (M) are able to operate within their theoretical capacities in the DM scenario, and both DS scenarios modelled. In the PM peak, the A3 (M) (north) arm is approaching capacity in the DM scenario, although queueing is limited to seven PCUs, which can be easily accommodated on the slip-road given its link length of 280 metres. This arm is anticipated to operate within capacity in both of the DS scenarios modelled. Furthermore, all other arms of this junction are forecast to operate within their theoretical capacity in all modelled scenarios.

Lane Simulation

3.2.2.4. As per the request of HE, further sensitivity tests have been conducted for Junction 2 using lane simulation in ARCADY. These sensitivity tests have been conducted using the corrected traffic flows, with the addition of construction traffic in the PM peak in the DS scenarios where appropriate. The results of the modelling undertaken for Junction 2, A3 (M) for the 2026 Do Minimum (DM) scenario when using lane simulation are set out in Table 8.

Table 8: 2026 DM Junction 2, A3 (M) Lane simulation results

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Dell Piece East	1 (left / ahead)	5	17	4	14
	2 (right / U-turn)	21	68	3	12
A3 (M) (south)	1 (left)	1	8	2	9
	2 (ahead / right / U-turn)	1	9	3	15
B2149 Dell Piece West	1 (left / ahead)	3	10	7	23
	2 (right / U-turn)	1	2	37	66
A3 (M) (north)	1 (left)	1	5	1	5
	2 (ahead / right / U-turn)	8	32	1	8

3.2.2.5. The results set out for the DM scenario in the AM peak forecast a queue of 21 PCU (126m) on the Dell Piece East arm. This queue will not block back to the next junction. In the PM peak, queueing of 37 PCU (222m) is forecast on B2149 Dell Piece West, this queue is also not anticipated to block back to the next junction. On both the northbound and southbound off-slips of the A3 (M) at this junction, queueing and delay is forecast to be minimal in the DM scenario in both the AM and PM peaks. Queue lengths on both off-slips can be accommodated without blocking back on to the A3 (M) mainline in either direction.

3.2.2.6. The results of the modelling undertaken for Junction 2, A3 (M) for the 2026 Do Something 1 (DS1) scenario when using lane simulation are set out in Table 9.

Table 9: 2026 DS1 Junction 2, A3(M) Lane simulation results

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Dell Piece East	1 (left / ahead)	5	16	4	14
	2 (right / U-turn)	12	38	3	11
A3 (M) (south)	1 (left)	1	8	3	15
	2 (ahead / right / U-turn)	2	9	3	13
B2149 Dell Piece West	1 (left / ahead)	2	9	2	9
	2 (right / U-turn)	1	2	34	58
A3 (M) (north)	1 (left)	1	5	1	5
	2 (ahead / right / U-turn)	9	35	1	8

3.2.2.7. The results set out for the DS1 scenario broadly align with those presented for the DM scenario. Some minor decreases in queuing are forecast in both the AM and PM peak as a result of an overall decrease in traffic flow through this junction in DS1 when compared with the DM scenario. Queueing is however forecast to increase on the A3 (M) (north) arm in the AM peak in DS1 when compared to the DM scenario by one PCU (6m). Overall the traffic reassignment associated with construction of the Onshore Cable Route is not predicted to have a detrimental impact on the operation of the junction in comparison with the DM scenario.

3.2.2.8. The results of the modelling undertaken for Junction 2, A3 (M) for the 2026 Do Something 1 (DS2) scenario when using lane simulation are set out in Table 10.

Table 10: 2026 DS2 Junction 2, A3 (M) Lane simulation results

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Dell Piece East	1 (left / ahead)	5	17	3	14
	2 (right / U-turn)	13	43	2	10
A3 (M) (south)	1 (left)	1	8	3	14
	2 (ahead / right / U-turn)	1	9	3	12
B2149 Dell Piece West	1 (left / ahead)	2	9	2	9
	2 (right / U-turn)	1	1	40	70
A3 (M) (north)	1 (left)	1	5	1	5
	2 (ahead / right / U-turn)	9	35	2	8

3.2.2.9. The junction modelling results for the DS2 scenario again align with those from the DM and the DS1 scenario. Whilst there are some minor variations in queue length and delays forecast, these are considered unlikely to materially impact upon the operation of the junction. Overall the traffic reassignment associated with construction of the Onshore Cable Route is not predicted to have a detrimental impact on the operation of the junction in comparison with the DM scenario.

3.2.3. JUNCTION 3, A3 (M)

3.2.3.1. The results of the modelling undertaken using lane simulation should be reviewed in the context of the assessments which have been previously undertaken for this junction. The results of the previous modelling at this junction, which does not use lane simulation, can be found in the following:

- 2026 DM AM and PM Peak: Table 11 of the originally submitted Transport Assessment (TA) (APP-448)

3.2.3.2. This table has been replicated below for ease of reference.

Table 11: 2026 DM junction modelling results, replicated from Table 111 of the originally submitted Transport Assessment (TA) (APP-448)

Arm	AM peak (08:00 – 09:00)			PM peak (17:00 – 18:00)		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Hulbert Road (east)	1	3	0.35	1	4	0.38
A3 (M) (south)	3	10	0.73	4	12	0.79
Hulbert Road (west)	3	5	0.71	2	3	0.54
A3 (M) (north)	8	28	0.89	30	66	1.00

3.2.3.3. Comparatively, the results of the modelling undertaken for Junction 3, A3 (M) for the 2026 DM scenario when using lane simulation are set out in Table 12.

Table 12: 2026 DM Junction 3, A3 (M) Lane simulation results

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	1	7	1	6
	2 (ahead / right / U-turn)	1	1	0	1
A3 (M) (south)	1 (left)	2	7	2	8
	2 (left / ahead / right / U-turn)	2	7	2	8
Hulbert Road (west)	1 (left /ahead)	96	196	2	7
	2 (right / U-turn)	1	5	2	6
A3 (M) (north)	1 (left /ahead)	5	22	164	484
	2 (right / U-turn)	1	6	1	7

3.2.3.4. The results set out for the DM scenario show limited queueing in the AM peak on all arms with the exception of the nearside lane of Hulbert Road (west) arm, which does not form part of the SRN. It is forecast that in the AM peak, in the DM scenario the Hulbert Road (west) arm of this junction will experience queueing of 96 PCU (576m). In the PM peak, a queue of 164 PCU (984m) is forecast for the A3 (M) (north) arm. This level of queueing extends beyond the limits of the off slip, blocking back on to the mainline of the A3 (M) southbound.

3.2.3.5. The results of the modelling undertaken for Junction 3, A3 (M) for the 2026 DS1 scenario when using lane simulation are set out in Table 12.

Table 13: 2026 DS1 Junction 3, A3 (M) Lane simulation results

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	1	7	1	6
	2 (ahead / right / U-turn)	0	1	0	1
A3 (M) (south)	1 (left)	2	8	2	8
	2 (left / ahead / right / U-turn)	2	9	2	9
Hulbert Road (west)	1 (left /ahead)	117	236	2	6
	2 (right / U-turn)	1	5	2	6
A3 (M) (north)	1 (left /ahead)	6	23	163	471
	2 (right / U-turn)	1	6	1	6

3.2.3.6. The modelling results for the DS1 scenario in the AM peak show an increase in queueing compared to the DM scenario on the Hulbert Road (west) arm. Minor increases in queue lengths are forecast on the A3 (M) (south) A3 (M) (north) arms, although these would be accommodated within the length of slip road.

3.2.3.7. In the PM peak, a decrease in the forecast queue length of 1 PCU (6m) is shown on the A3 (M) northern approach. As this arm is forecast to be have extensive queueing in the PM peak in the DM scenario, this decrease in queueing is considered unlikely to have a material impact on the operation of the junction. As shown on the traffic flow diagrams provided at Appendix 3 ('Junction 3, A3 (M) Adjusted Turning Counts), the implementation of traffic management in the DS1 scenario would increases the traffic flow on the A3 (M) northern approach to Hulbert Road east by only five vehicles during this peak hour. For context purposes, this is the nearside lane of A3 (M) (north) that experiences the highest forecast queue values, however it can be seen that the actual increase in traffic flow using this link is not at all significant.

3.2.3.8. The results of the modelling undertaken for Junction 3, A3 (M) for the 2026 DS2 scenario when using lane simulation are set out in Table 124.

Table 14: 2026 DS2 Junction 3, A3 (M) Lane simulation results

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	1	7	1	6
	2 (ahead / right / U-turn)	1	1	0	1
A3 (M) (south)	1 (left)	2	8	2	9
	2 (left / ahead / right / U-turn)	2	8	2	9
Hulbert Road (west)	1 (left /ahead)	119	240	2	6
	2 (right / U-turn)	1	5	2	6
A3 (M) (north)	1 (left /ahead)	5	21	169	491
	2 (right / U-turn)	1	6	1	7

3.2.3.9. The results for the DS2 scenario, as with the DS1 scenario, show an increase in forecast queueing on the Hulbert Road (west) arm in the AM peak, and a minor increase in queueing on the A3 (M) (south) and A3 (M) (north) arms, but which can be accommodated within the length of the slip roads. In the PM peak, an increase in the forecast queue length of 5 PCU (30m) is shown on the A3 (M) north approach despite the implementation of traffic management in this scenario only increasing the traffic flow between this arm and Hulbert Road east by nine vehicles. As with the DS1 scenario, it is considered that these changes will not have a material impact upon the operation of the junction when compared to the DM scenario.

3.3. SUMMARY

3.3.1.1. This Section has addressed Item 1 of HE03 which requested that additional sensitivity tests be run at both Junction 2, A3 (M) and Junction 3, A3 (M) using lane simulation in ARCADY. Queuing at Junction 2, A3 (M) is forecast to be minimal on A3(M) off-slips in all assessed scenarios. At Junction 3, it is forecast there that there will be queues on the offside lane of Hulbert Road west in the AM peak in all scenarios. Significant queue lengths are forecast on the A3 (M) north arm in the PM peak in all scenarios. In all DS scenarios, however, the implementation of traffic management associated with construction of the Onshore Cable Route is not forecast to have a material impact on the operation of either junction or peak hour queue lengths as it relates to the SRN.

3.3.1.2. In addition, the Land to the East of Horndean and Old Park Farm committed development schemes are required to introduce mitigation at the A3 (M) junctions and this is discussed in Section 4 of this document. Together with the points raised above in respect of the traffic management measures, given that this analysis includes for the development traffic associated with these committed schemes, but without the identified mitigation, the assessment undertaken is therefore a theoretical one which could not occur in reality.

4. COMMITTED DEVELOPMENT ASSESSMENTS

4.1. INTRODUCTION

4.1.1.1. This section addresses the comments raised in Item 2 of HE03, pertaining to the mitigation measures secured at both Junction 2, A3 (M) and Junction 3, A3 (M) in association with committed developments in the area.

4.2. ITEM 2

4.2.1.1. Item 2 of HE's Technical Note relates to the inclusion of traffic associated with committed development in the SRTM, without the inclusion of the mitigation measures which are associated with said developments. Specifically, HE stated that:

> *'3.16. The SRTM included the signalisation of the A3(M) northbound off-slip approach to the Junction 3 roundabout. HE02 states that improvements are also proposed for the A3(M) Junction 2 as part of a development at Land East of Horndean, Rowlands Castle Road, Horndean, which proposes 800 dwellings and other complimentary uses. Both the consented scheme (55562/001), approved in 2016, and a revised scheme awaiting decision following planning committee held on 11 June 2020 (55562/005), included proposals to signalise A3(M) Junction 2. WSP note that the SRTM assumptions did not include this mitigation scheme, however it did include the demand generated by the proposed development. WSP conclude that given that the junction has been modelled within the Aquind Transport Assessment in its existing form without this mitigation, and no capacity concerns have been reported under such assessment, it is considered that a robust approach has also been taken for the modelling of this junction.*
>
> *3.17. As stated above, AECOM do not yet agree that the junctions concerned necessarily operate within capacity once the impact of unequal lane usage is taken into account. Since the traffic flows used include the traffic generated by these committed developments, but the junction capacity models do not include their mitigation schemes, it is not possible to establish with any certainty what the net impact of the proposed Aquind Interconnector construction phase will be in either of the following scenarios:*
>
> - *Without the committed development and without its mitigation scheme;*
> - *With the committed development and with its mitigation scheme.*

3.18. It is possible that either of these scenarios would result in a more favourable outcome than that currently presented in the TA. However, as things stand, the analysis has not shown conclusively that there will not be a severe impact at either A3(M) Junction 2 or A3(M) Junction 3 during the construction phase of the Aquind interconnector.'

4.2.1.2. As such, following this request from HE further junction modelling has been undertaken for both Junction 2 and Junction 3 of the A3 (M).

4.2.2. COMMITTED DEVELOPMENT SCHEMES

4.2.2.1. The following documents have been reviewed in order to inform the assessments undertaken on this topic:

- Land to the east of Horndean (55562/005):
  - Environmental Statement – Chapter 2: Site description and development proposals (December 2018);
  - Environmental Statement – Technical Appendix J: Transport Assessment (December 2018);
- Old Park Farm, Waterlooville (05/00500/OUT):
  - Environmental Statement Volume 3A - Transport Assessment (November 2004); and
  - Drawing No. 3-004032-DR-100-003-P06: A3(M) J3 Northbound Slip S278 Signalisation Scheme (March 2017).

4.2.2.2. A brief overview of these committed developments and their anticipated impact upon Junction 2 and Junction 3 of the A3(M) is set out in Table 15 and drawings of the proposed junction improvement schemes are provided in Appendix 5 for reference.

Table 15: Overview of committed development

Committed Development	Proposals	Anticipated Traffic Impacts	Committed Mitigation
Land to the East of Horndean	800 Dwellings 2ha Employment Local Centre Primary School	454 Movements through Junction 2, A3 (M) in the AM peak, and 460 in the PM peak	Full signalisation of Junction 2, A3 (M)
Old Park Farm (Forming part of the West of Waterlooville MDA)	474 Mixed dwellings 7.7ha of employment 2.8ha of mixed-use land	189 Movements Junction 3, A3 (M) in the AM peak, and 153 in the PM peak	Partial signalisation of Junction 3, A3 (M) (northbound off-slip and southern circulatory only).

4.2.3. JUNCTION MODELLING WITH THE REMOVAL OF TRAFFIC ASSOCIATED WITH COMMITTED DEVELOPMENTS

Junction 2, A3 (M)

4.2.3.1. Junction 2 was found to be able to operate with minimal queueing in the sensitivity test at Section 3.2.2. The sensitivity test represented a scenario in which the traffic associated with the Land to the east of Horndean development is travelling through the junction in its current layout. This sensitivity test did not account for the proposed mitigation that is associated with the Land east of Horndean proposals. As A3 (M) Junction 2, was shown to operate well within capacity assuming the very robust sensitivity test, no further ARCADY assessments of this junction have been undertaken removing committed development traffic.

Junction 3, A3 (M)

4.2.3.2. This section includes details of the specific traffic flow movements which are anticipated to be generated from the Old Park Farm development. This identified committed development traffic was then removed from the traffic flows for Junction 3, A3 (M) which were obtained from the SRTM, and the ARCADY model re-run with these revised traffic flows. This assessment provides an understanding of the impact of the proposals associated with the AQUIND project in isolation, in a scenario in which the discussed committed development traffic is not put in place without the required mitigation scheme to be provided by the Old Park Farm development.

4.2.3.3. Full ARCADY outputs of this assessment are included in Appendix 6 of this Technical Note.

4.2.3.4. The traffic flows associated with the Old Park Farm have been taken from Appendix 10 of the Old Park Farm Transport Assessment. A summary of the development only traffic which is anticipated to travel through Junction 3 of the A3 (M) is set out in Table 16 and Table 17 below.

Table 16: Old Park Farm, West of Waterlooville MDA, Development Traffic (AM Peak) - Junction 3, A3 (M)

To / From		A	B	C	D
A	Hulbert Road	0	0	16	0
B	A3 (M) (south)	0	0	75	0
C	B2150 Hulbert Road	11	46	0	15
D	A3 (M) (north)	0	0	26	0

Table 17: Old Park Farm, West of Waterlooville MDA, Development Traffic (PM Peak) - Junction 3, A3 (M)

To / From		A	B	C	D
A	Hulbert Road	0	0	9	0
B	A3 (M) (south)	0	0	36	0
C	B2150 Hulbert Road	15	63	0	21
D	A3 (M) (north)	0	0	9	0

4.2.3.5. As per HE's request, the committed development traffic set out in Table 16 and Table 17 have been removed from the SRTM turning counts for this Junction 3, A3 (M). The resultant traffic flows were then assessed using an ARCADY model of Junction 3, A3 (M). The results of this assessment for the DM, DS1 and DS2 scenarios are included in Table 18, Table 19 and Table 20 respectively.

Table 18: 2026 DM with committed development traffic removed

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:30)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	2	7	1	6
	2 (ahead / right / U-turn)	1	1	0	1
A3 (M) (south)	1 (left)	2	7	2	8
	2 (left / ahead / right / U-turn)	2	7	2	8
B2150 Hulbert Road (west)	1 (left)	85	174	2	7
	2 (left / ahead / right / U-turn)	1	4	1	5
A3 (M) (north)	1 (left /ahead)	5	23	165	472
	2 (right / U-turn)	1	6	1	7

4.2.3.8. The results for the DM scenario when modelled using lane simulation demonstrate minimal queueing on all arms other than Hulbert Road west in the AM peak. Hulbert Road west is anticipated to have a queue of 85 PCU (5108m). In the PM peak, the longest queues are forecast for A3 (M) north where the queue is forecast to extend for 165 PCU (990m) and as such is anticipated to exceed the length of the southbound slip road, blocking back to the south bound mainline of the A3 (M). The results are similar to the position presented in Table 12 which includes committed development traffic associated with Old Park Farm, albeit that during the AM peak a lower queue length is forecast for B2150 Hulbert Road with the committed development traffic removed.

4.2.3.9. Table 19 now presents the capacity assessments for the DS1 scenario, without the Old Park Farm committed development traffic.

Table 19: 2026 DS1 with committed development traffic removed

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:30)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	1	7	1	6
	2 (ahead / right / U-turn)	1	1	0	1
A3 (M) (south)	1 (left)	2	8	2	8
	2 (left / ahead / right / U-turn)	2	8	2	8
B2150 Hulbert Road (west)	1 (left)	107	214	2	6
	2 (left / ahead / right / U-turn)	1	4	2	6
A3 (M) (north)	1 (left /ahead)	6	24	163	469
	2 (right / U-turn)	1	6	1	7

4.2.3.12. The results set out for the DS1 scenario show a worsening in the AM peak when compared to the DM scenario when modelled using lane simulation, with a 22 PCU (132m) increase in traffic flows being anticipated on the B2150 Hulbert Road (west).

4.2.3.13. In the PM peak, there is a slight decrease in queueing forecast for the A3 (M) north arm, with this decrease comprising of two PCU (12m). As this arm is already forecast to experience considerable queueing in the DM scenario, it is considered that this minor decrease would not have a material impact on the operation of the junction. Again, the results are similar to the position presented in Table 13 which includes committed development traffic associated with Old Park Farm.

4.2.3.14. Table 20 now presents the capacity assessments for the DS2 scenario, without the Old Park Farm committed development traffic.

Table 20: 2026 DS2 with committed development traffic removed

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:30)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	2	7	1	6
	2 (ahead / right / U-turn)	1	1	0	1
A3 (M) (south)	1 (left)	2	8	2	8
	2 (left / ahead / right / U-turn)	2	8	2	8
B2150 Hulbert Road (west)	1 (left)	105	214	2	6
	2 (left / ahead / right / U-turn)	1	4	2	5
A3 (M) (north)	1 (left /ahead)	6	24	165	467
	2 (right / U-turn)	1	6	1	6

4.2.3.16. The results of the DS2 assessment provides similar results to the DS1 scenario where there is forecast to be an increase in queue lengths on B2150 Hulbert Road in the AM peak when compared to the DM scenario. As it relates to the SRN, this temporary increase in queue lengths is unlikely to result in a material impact on the operation of the junction and would be unlikely to occur in reality due to the programme restrictions contained within the FTMS to mitigate the cumulative impacts of traffic management associated with construction of the Onshore Cable Route. Again, results are similar to the position presented in Table 14 which includes committed development traffic associated with Old Park Farm, albeit during the AM peak a lower queue length is forecast for B2150 Hulbert Road and a lower queue is shown on the A3 (M) (north) arm during the PM peak.

4.2.4. JUNCTION MODELLING WITH THE COMMITTED DEVELOPMENT AND WITH MITIGATION SCHEME

4.2.4.1. Further to the assessment undertaken in Section 4.2.3, this Section includes additional assessments of both Junction 2 and Junction 3 of the A3 (M). These additional assessments use the original traffic flows obtained from the SRTM, which included traffic to be generated from the committed developments at Old Park Farm and Land east of Horndean. The traffic flows that are inclusive of this committed development traffic were run in LinSig, accounting for the junction signalisation schemes which are to be delivered as mitigation measures alongside these committed developments. Full LinSig outputs are included in Appendix 7 of this Technical Note.

4.2.4.2. Details of the junction signalisation schemes to be delivered as mitigation alongside these committed developments were obtained from the following documents and are included in Appendix 5 of this Note:

- Junction 2, A3 (M) (Land East of Horndean): Environmental Statement – Technical Appendix J: Transport Assessment: Appendix L 'Junction 3 – A3 (M) Junction 2 – Arcady and LinSig Results' (December 2018); and
- Junction 3, A3 (M) (Old Park Farm): Drawing No. 3-004032-DR-100-003-P06: A3(M) J3 Northbound Slip S278 Signalisation Scheme (March 2017).

Junction 2, A3 (M)

4.2.4.3. The mitigation measures proposed to be implemented alongside the Land East of Horndean includes the full signalisation of Junction 2 of the A3 (M). This signalisation scheme has been modelled in LinSig with the SRTM traffic flows for the DM, DS1 and DS2 scenarios. Results are provided in terms of capacity, expressed as percentage Degree of Saturation (D.o.S), Mean Maximum Queue Values, expressed as Passenger Car Units (PCU's) and Delay per vehicle, expressed on the basis of average values in seconds, per vehicle, The results of these assessments can be seen in Table 21, Table 22 and Table 23.

Table 21: 2026 DM with committed development traffic and signalisation scheme - Junction 2, A3 (M)

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Dell Piece East	100.4	31	80	92.7	18	42
A3 (M) South (off-slip)	58.8	7	19	61.9	8	14
B2149 Dell Piece West	73.9	11	19	109.6	69	201
A3 (M) North (off-slip)	105.1	41	144	90.4	11	55
Circulatory (east)	103.0	33	105	91.3	11	33
Circulatory (south)	49.0	2	8	45.8	2	10
Circulatory (west)	80.5	9	22	110.7	47	222
Circulatory (north)	82.0	5	22	91.2	6	20
	Cycle Time: 60s PRC: -16.7%			Cycle Time: 60s PRC: -23.0%		

4.2.4.4. The results set out for the DM scenario show that the junction is anticipated to be overcapacity in both the AM and PM peaks. The longest anticipated queue length in the AM peak is forecast to occur of the A3 (M) (north) off slip. This queue is forecast to extend for 41 PCU (246m), which can be accommodated within the 280m off-slip and thus would not block back onto the southbound mainline of the A3 (M). In the DM scenario in the PM peak the most extensive queueing is forecast of the B2149 Dell Piece West approach, with this queue comprising 69 PCU (414m). In addition, queueing is forecast for the western circulatory of the junction of 47 PCU (282m). This level of queueing will block back beyond the storage capacity of the circulatory and thus will impact upon the operation of the junction. The matter of the forecast queue lengths is discussed in further detail in the summary of this section.

Table 22: 2026 DS1 with committed development traffic and signalisation scheme - Junction 2, A3 (M)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Dell Piece East	100.2	29	80	94.1	19	48
A3 (M) South (off-slip)	56.5	7	18	60.8	8	12
B2149 Dell Piece West	73.1	11	18	108.8	67	186
A3 (M) North (off-slip)	94.8	20	47	88.4	10	53
Circulatory (east)	100.5	29	74	83.6	14	33
Circulatory (south)	56.0	3	8	45.8	2	12
Circulatory (west)	84.8	10	29	111.1	46	231
Circulatory (north)	92.3	15	47	91.4	6	20
	Cycle Time: 60s PRC: -11.7%			Cycle Time: 60s PRC: -23.5%		

4.2.4.5. The results for this junction in the DS1 scenario show that the junction would operate no worse than the position shown by the DM scenario, with both slip roads seeing queueing either remaining as it is in the DM or decreasing.

Table 23: 2026 DS2 with committed development traffic and signalisation scheme - Junction 2, A3 (M)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Dell Piece East	100.0	29	79	94.0	18	47
A3 (M) South (off-slip)	56.4	7	18	60.5	8	12
B2149 Dell Piece West	73.0	11	18	108.8	67	187
A3 (M) North (off-slip)	94.8	20	47	88.9	10	54
Circulatory (east)	100.5	29	74	87.9	10	27
Circulatory (south)	55.2	3	9	46.0	2	12
Circulatory (west)	84.6	10	29	111.3	47	233
Circulatory (north)	92.3	15	47	91.4	6	20
	Cycle Time: 60s PRC: -11.7%			Cycle Time: 60s PRC: -23.7%		

4.2.4.6. The results for the DS2 scenario broadly align with those which were forecast for the DS1 scenario, with the junction anticipated to operate over capacity in both the AM and PM peaks, but no worse than the position shown by the DM scenario. Queue lengths on the slip roads in both periods can be accommodated without blocking back on to the mainline of the A3 (M).

4.2.4.7. This position is however unlikely to occur in reality due to the programme restrictions contained within the FTMS to mitigate the cumulative impacts of traffic management associated with construction of the Onshore Cable Route.

Junction 3, A3 (M)

4.2.4.8. The mitigation measures proposed to be implemented alongside the Old Park Farm development includes the partial signalisation of Junction 3 of the A3 (M). Signalisation is proposed for the northbound off-slip of the A3 (M) at this junction, and the corresponding circulatory. As has been discussed in Section 1 of this Technical Note, LinSig assessments of Junction 3, A3 (M) have been undertaken twice, for two different lane usage scenarios on the A3 (M) south approach. Aside from the differences in lane alignment of the A3 (M) south approach, the two models of Junction 2, A3 (M) are identical. The signalisation scheme has been modelled using both lane alignments, with the SRTM traffic flows for the DM, DS1 and DS2 scenarios.

A3 (M) South Approach: Left Turn Prohibited from Offside Lane

4.2.4.9. This Section contains the results of the junction modelling undertaken using the SRTM flows, when modelled preventing use of the offside lane of the A3 (M) approach to turn left on to B2150 Hulbert Road (west).

4.2.4.10. The results of these assessments are set out in Table 24, Table 25 and Table 26.

Table 24: 2026 DM with committed development traffic and signalisation scheme - Junction 3, A3 (M) (left turn prohibited from offside lane)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	53.7	1	5	49.7	1	6
A3 (M) South off-slip	86.3	18	20	92.7	23	28
B2150 Hulbert Road (West)	117.0	103	302	85.8	5	13
A3 (M) North off-slip	79.9	2	10	115.4	138	272
Circulatory (south)	89.0	11	50	89.8	12	51
	Cycle Time: 60s			Cycle Time: 60s		

	PRC: -30.0%	PRC: - 28.2%

4.2.4.11. The results set out in Table 24 demonstrate that the junction is over its theoretical capacity in the AM and PM peaks in the DM scenario. The longest queues in the AM peak are forecast on the B2150 Hulbert Road approach, which is anticipated to see queueing of 103 PCU (618m). In the PM peak the longest queues are seen on the A3 (M) North approach, which is anticipated to see queueing of 138 PCU (828m). This queue is anticipated to extend beyond the limits of the 260m slip, blocking back on to the mainline southbound carriageway of the A3 (M).

Table 25: 2026 DS1 with committed development traffic and signalisation scheme - Junction 3, A3 (M) (left turn prohibited from offside lane)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	53.8	1	5	57.0	1	7
A3 (M) South off-slip	94.2	25	32	99.6	37	59
B2150 Hulbert Road (West)	116.8	102	300	78.3	3	9
A3 (M) North off-slip	80.0	2	10	117.3	147	298
Circulatory (south)	90.5	12	53	93.7	14	63
	Cycle Time: 60s PRC: -29.8%			Cycle Time: 60s PRC: - 30.3%		

4.2.4.12. The results set out for the DS1 scenario demonstrate the junction is again anticipated to be exceeding its theoretical capacity in the AM and PM peak. In the AM peak the reassignment of vehicles away from traffic management included in the DS1 scenario does not materially impact the operation of the junction. In the PM peak the DS1 scenario is forecast to result in a slight increase in queue lengths on the A3 (M) North approach from 138 PCU to 147 PCU (882m). However, this increase is unlikely to represent a material difference to drivers travelling through this junction, given the forecast queues seen in the DM scenario, with only an additional 26 second delay per vehicle shown.

Table 26: 2026 DS2 with committed development traffic and signalisation scheme - Junction 3, A3 (M) (left turn prohibited from offside lane)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	54.2	1	5	56.4	1	7
A3 (M) South off-slip	93.7	24	31	100.1	39	64
B2150 Hulbert Road (West)	115.0	112	268	78.7	4	9
A3 (M) North off-slip	79.8	2	10	117.6	149	303
Circulatory (south)	90.6	12	55	92.6	13	59
	Cycle Time: 60s PRC: -29.8 %			Cycle Time: 60s PRC: -30.7%		

4.2.4.13. The results for the DS2 scenario broadly align with those which were forecast for the DS1 scenario, with the junction anticipated to operate over capacity in both the AM and PM peaks. This results in queue lengths on the A3 (M) North approach extending back onto the A3 (M) mainline in the PM peak periods. This temporary increase in queue lengths however is unlikely to occur in reality due to the programme restrictions contained within the FTMS to mitigate the cumulative impacts of traffic management associated with construction of the Onshore Cable Route.

A3 (M) South Approach: Left Turn Permitted from Offside Lane

4.2.4.14. This Section contains the results of the junction modelling undertaken using the SRTM flows, when modelled allowing the use of the offside lane of the A3 (M) south approach to turn left on to B2150 Hulbert Road (west), which as stated in Paragraph 1.1.2.5 is a manoeuvre which is commonplace at this junction

4.2.4.15. The results of these assessments are set out in Table 27, Table 28 and Table 29.

Table 27: 2026 DM with committed development traffic and signalisation scheme - Junction 3, A3 (M) (left turn permitted from offside lane)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	53.8	1	5	49.2	1	6
A3 (M) South off-slip	45.6	6	10	47.0	6	10
B2150 Hulbert Road (West)	117.9	106	314	85.8	5	13
A3 (M) North off-slip	79.9	2	10	115.4	138	272
Circulatory (south)	83.4	10	40	85.6	11	42
	Cycle Time: 60s PRC: - 31%			Cycle Time: 60s PRC: -28.2%		

4.2.4.16. The results set out for the DM scenario show that the junction is over capacity in both the AM and PM peak. The most extensive queueing in the AM peak is the 106 PCU (636m) queue anticipated on the B2150 Hulbert Road (west) arm. In the PM peak, the most extensive anticipated queue is for the A3 (M) (north) off-slip, which is forecast to extend for 138 PCU (828m). This queue is forecast to extend beyond the extents of the slip-road, blocking back on to the southbound mainline.

Table 28: 2026 DS1 with committed development traffic and signalisation scheme - Junction 3, A3 (M) (left turn permitted from offside lane)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	53.9	1	5	53.3	1	6
A3 (M) South off-slip	49.5	7	10	51.0	7	10
B2150 Hulbert Road (West)	117.3	103	306	77.1	6	10
A3 (M) North off-slip	79.9	2	10	117.6	148	302
Circulatory (south)	84.7	10	41	88.6	12	47
	Cycle Time: 60s PRC: -30.3%			Cycle Time: 60s PRC: -30.7%		

4.2.4.17. The results of the DS1 scenario broadly align with those set out for the DM scenario. In the PM scenario, the queueing on the A3 (M) north off-slip is anticipated to experience a slight increase in queueing of 10 PCU (60m). Given the already considerable queueing anticipated in the DM scenario, it is unlikely that this addition to the queue length will have a material impact upon the operation of the junction.

Table 29: 2026 DS2 with committed development traffic and signalisation scheme - Junction 3, A3 (M) (left turn permitted from offside lane)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	54.2	1	5	52.8	1	6
A3 (M) South off-slip	49.3	7	10	51.3	7	10
B2150 Hulbert Road (West)	117.5	104	309	77.4	6	10
A3 (M) North off-slip	79.8	2	10	118.0	150	307
Circulatory (south)	84.9	11	41	87.7	12	45
	Cycle Time: 60s PRC: -30.5%			Cycle Time: 60s PRC: -31.1%		

4.2.4.18. The results set out for the DS2 scenario broadly align with those for the DM scenario. In the PM scenario, the queueing on the A3 (M) north off-slip is anticipated to experience a slight increase in queueing of 12 PCU (66m). Given the already considerable queueing anticipated in the DM scenario, it is unlikely that this addition to the queue length will have a material impact upon the operation of the junction.

4.3. SUMMARY

4.3.1.1. This Section has addressed Item 2 of HE03 pertaining to the impact the implementation of committed developments would have in on Junction 2 and Junction 3 of the A3 (M) in relation to the AQUIND proposals. Whilst generally it is noted that the DS1 and DS2 scenarios do not predict a material worsening of junction operation, at Junction 3 it is forecast that queue lengths extend back onto the A3 (M) mainline as per the existing junction layout. In viewing these results however, the following should be noted:

- Stated queue lengths for signalised arms at Junctions are mean maximum queue lengths; this is a robust measurement of queue lengths and is likely to far exceed the average static queue at the junction. In addition, it should be noted that the Mean Maximum Queue values obtained consist of traffic joining the back of the queues formed at the end of the red phase.

- As stated in Section 3.1 the DS1 and DS2 scenarios have used a worst-case scenario for the location of traffic management associated with construction of the Onshore Cable Route with temporary traffic signals included on the B2150 Hambledon Road, B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue roundabout and A3 London Road / Ladybridge roundabout. The cumulative effect of this traffic management leads to a high level of traffic re-assignment away from the Onshore Cable Corridor and onto the wider highway network such as A3 (M) junctions 2 and 3. However this level of traffic re-assignment is unlikely to occur due to the programme restrictions contained within the Framework Traffic Management Strategy (FTMS) (REP1-068), which prevents such a cumulative traffic management scenario from occurring.
- All assessments have been undertaken using traffic flows shown in Table 4, which represent a significant increase when compared against the observed 2019 traffic surveys and predicted TEMPRO traffic growth rates for the same 2019-2026 period. For example, in the PM peak where queuing is forecast to reach the A3(M) mainline at Junction 3, the SRTM traffic flows represent a doubling of the growth rate predicted by TEMPRO between 2019 and 2026.This therefore provides a very robust forecast of likely junction operation in the DM, DS1 and DS2 scenarios. By definition, this would lead to a position where traffic queues shown by the additional modelling would not arise.
- In relation to the robust nature of the traffic flows, the high volume of traffic has led to all tested DM scenarios operating at or over capacity. As a consequence, any impacts associated with reassignment is heightened due to the junction not having available capacity to cater for increased traffic demand.
- The junction improvement scheme for A3 (M) Junction 2 forms part of the committed transport strategy for the outline planning permission 55562/005 that was approved at planning committee in June 2020. At the time of writing however a S106 Agreement has not been finalised and the Applicant understands that the trigger point for a planning condition relating to these works is yet to be confirmed. This is highlighted from the extract taken from the Planning Committee report for planning application 55562/005:

  "Highways England has considered the application and the alterations to the junctions to accommodate the application and is satisfied that any changes can be safely made. They raise no objection subject to a condition requiring pedestrian and cycle routes linking the east and west sides of the A3 (M) to be carried out before first occupation. Although these works are requested to be carried out prior to first occupation of the development, the applicant has been in discussion with HCC LHA and it has been accepted by HCC LHA that the junction

works can be carried out later in the development, for example, prior to first occupation of the 230th dwelling. This is subject to the developer providing a bus service to and from the site to Horndean Technical College as soon as the first secondary school aged child occupies the development. This is to be secured through a S106 legal agreement and the bus service would commence from that point and for a full school term following completion of the Junction 2 works."

(https://easthants.moderngov.co.uk/documents/s12748/EHDC%20Part%201%20Section%201%20Item%201%20Land%20East%20of%20Horndean%20SH.pdf, (6. Access, movement and highway safety)

- On this basis and assuming a reasonable build out of the site at a rate of 80 dwellings per year (as per the submitted Transport Assessment) starting in 2021, completion of the junction improvement works at Junction 2 would not be required until the end of 2023 which is when construction of the Onshore Cable Route is anticipated to be complete (Table 3.9 – Indicative Onshore Construction Programme, ES Chapter 3 Description of the Proposed Development (APP-118).

4.3.1.2. It is therefore concluded by the Applicant the scenarios tested within this Technical Note and very unlikely to occur in reality but represent a very robust prediction of junction operation and the impact of the Proposed Development.

5. ALTERNATIVE FUTURE YEAR ASSESSMENT

5.1. INTRODUCTION

5.1.1.1. Further discussions held between the Applicant and HE, at a meeting date 18th November 2020, led to a request for additional lane simulation assessments to be undertaken. The additional assessments are set out in this Section and are based on an alternative future year assessment calculated on the basis of observed traffic flows for both Junction 2 and Junction 3 of the A3 (M).

5.1.1.2. The full results of the alternative assessments undertaken are included in Appendix 8 for reference.

5.2. JUNCTION 2, A3 (M)

5.2.1. OBSERVED TRAFFIC FLOWS

5.2.1.1. The Applicant undertook Manual Classified Turning Count (MCTC) traffic surveys at Junction 2 of the A3 (M) in September 2019. The full results of these traffic surveys can be seen in Appendix 2 and are replicated in Table 30 for reference.

Table 30: Junction 2, A3 (M) - 2019 Observed turning counts

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	414	189	317	0	317	311	205
B	A3 (M) (south)	163	2	242	1	372	0	523	0
C	B2149 Dell Piece West	306	561	2	228	234	377	5	166
D	A3 (M) (north)	159	1	112	0	355	3	231	0

5.2.2. TEMPRO GROWTH FACTORS

5.2.2.1. As is stated in paragraph 1.10.3.9. of the Transport Assessment (APP-448), peak construction on the Onshore Cable Corridor is anticipated to be in 2022. As such, the additional future year assessments undertaken in this Section are based in 2022. TEMPRO growth factors have been used to growth the observed 2019 traffic flows to anticipated 2022 traffic levels. The locally adjusted growth factors used are set out in Table 31.

Table 31: Junction 2, A3 (M) - Locally adjusted TEMPRO growth rates (2019 - 2022)

Level	Area	Local Growth Figure (2019 – 2022)	
		AM Peak	PM Peak
E02006829	East Hampshire 016	1.046692	1.04548

5.2.2.2. The resultant 2022 turning counts for Junction 2, A3 (M) are set out in Table 32.

Table 32: Junction 2, A3 (M) - 2022 Turning counts

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	433	198	332	0	331	325	214
B	A3 (M) (south)	171	2	253	1	389	0	547	0
C	B2149 Dell Piece West	320	587	2	239	245	394	5	174
D	A3 (M) (north)	166	1	117	0	371	3	242	0

5.2.3. COMMITTED DEVELOPMENT TRAFFIC

5.2.3.1. As is discussed in Section 4.2.2 of this Technical Note, the 'Land east of Horndean' committed development is scheduled to be being implemented during the same time period as the AQUIND Interconnector proposals. In 2022, the peak year for construction for AQUIND, the construction phasing set out in paragraph 2.50 of Chapter 2 of the Land east of Horndean Environmental Statement indicates that development will be 26% completed.

5.2.3.2. As such, 26% of the total development traffic set out in in "Environmental Statement – Technical Appendix J: Transport Assessment (December 2018)" has been calculated for inclusion in this assessment. In addition to this, the committed development traffic which was included in the Land east of Horndean Transport Assessment, associated with a nearby care home and sports pitches was also included. The resultant calculated development traffic, including the 2022 Land east of Horndean, care home and sports pitches traffic are set out in Table 33

Table 33: Junction 2, A3 (M) - 2022 Development traffic (Land East of Horndean and additional committed development)

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	55	16	21	0	39	10	13
B	A3 (M) (south)	28	0	1	0	60	0	9	0
C	B2149 Dell Piece West	3	10	0	18	4	2	0	10
D	A3 (M) (north)	9	0	1	0	21	0	4	0

5.2.4. ALTERNATIVE DM SCENARIO

5.2.4.1. The 2022 committed development traffic set out in Table 33 have been added to the 2022 turning counts set out in Table 32 create the alternative DM scenario turning counts used in this additional assessment. The turning counts for the alternative DM are set out in Table 34.

Table 34: Junction 2, A3 (M) - Alternative DM scenario (2022)

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	489	214	353	0	370	335	227
B	A3 (M) (south)	199	2	254	1	449	0	556	0
C	B2149 Dell Piece West	323	597	2	256	249	396	5	183
D	A3 (M) (north)	175	1	118	0	392	3	246	0

5.2.5. TRAFFIC REDISTRIBUTION

5.2.5.1. In order to in take into account the anticipated impacts of the construction of the Onshore Cable Corridor, adjustments have been made to the alternative DM scenario presented in Table 34 on the basis of the traffic redistribution set out in the DS scenarios of the SRTM outputs.

5.2.5.2. In order to calculate these adjustments, the difference in traffic flows (in PCU) between the DM scenario, and both DS scenarios was first calculated. These differences are set out in Table 35.

Table 35: SRTM flows: difference between DM scenario and DS1 / DS2

		DS1							
		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	-34	-5	0	0	-1	-17	0
B	A3 (M) (south)	-1	0	25	0	-31	0	190	0
C	B2149 Dell Piece West	6	45	0	-46	6	0	0	16
D	A3 (M) (north)	-16	0	8	0	8	0	-36	0
		DS2							
		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	-35	-5	0	0	-2	-17	0
B	A3 (M) (south)	-2	0	24	0	-31	0	185	0
C	B2149 Dell Piece West	7	46	0	-48	5	1	0	17
D	A3 (M) (north)	-17	0	8	0	8	0	-34	0

As can be seen in

5.2.5.3. Table 35, the differences between DS1/DS2 and the DM scenario are broadly aligned. As such, an average of these has been take forward for use in the calculation of the alternative DS scenario. The average DS flow difference when compared to the DM is set out in Table 36.

Table 36: Average difference between DM and DS scenarios

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	-34	-5	0	0	-1	-17	0
B	A3 (M) (south)	-2	0	24	0	-31	0	187	0
C	B2149 Dell Piece West	7	45	0	-47	6	1	0	16
D	A3 (M) (north)	-17	0	8	0	8	0	-35	0

5.2.5.4. In order to calculate the alternative DS scenario, the average difference between DM and DS scenarios has been applied to the alternative DM traffic flows which are set out in Table 34. The resultant traffic flows for the alternative DS scenario are set out in Table 37.

Table 37: Alternative DS scenario traffic flows

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Dell Piece East	0	455	209	352	0	369	318	227
B	A3 (M) (south)	197	2	279	1	418	0	743	0
C	B2149 Dell Piece West	330	642	2	209	254	421	5	224
D	A3 (M) (north)	159	1	126	0	400	3	211	0

5.2.5.5. The traffic flows for the alternative DM and DS scenarios have been used in additional assessments undertaken in this section.

5.2.6. LANE SIMULATION RESULTS

5.2.6.1. This section sets out the lane simulation modelling results for Junction 2, A3 (M) when assessed using the alternative DM and DS scenarios detailed above.

5.2.6.2. The results for the DM scenario are included in Table 38, and the DS scenario in Table 39.

Table 38: Junction 2, A3 (M) Alternative DM Lane Simulation

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Dell Piece East	1 (left / ahead)	3	12	3	12
	2 (right / U-turn)	4	8	3	6
A3 (M) (south)	1 (left)	1	6	2	11
	2 (ahead / right / U-turn)	1	6	2	8
B2149 Dell Piece West	1 (left / ahead)	2	8	1	7
	2 (right / U-turn)	1	1	0	1
A3 (M) (north)	1 (left)	1	5	1	8
	2 (ahead / right / U-turn)	1	5	1	6

5.2.6.3. The results set out for the alternative DM scenario show the junction is able to operate with limited queueing and delay on all arms, in both the AM and PM peak periods.

Table 39: Junction 2, A3 (M) Alternative DS Lane Simulation

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:45)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Dell Piece East	1 (left / ahead)	3	11	3	12
	2 (right / U-turn)	2	4	2	5
A3 (M) (south)	1 (left)	1	6	6	22
	2 (ahead / right / U-turn)	1	6	1	8
B2149 Dell Piece West	1 (left / ahead)	2	7	1	7
	2 (right / U-turn)	1	1	0	1
A3 (M) (north)	1 (left)	1	5	1	8
	2 (ahead / right / U-turn)	1	5	1	6

5.2.6.4. As with the alternative DM scenario, the results for the alternative DS scenario also show minimal queueing and delays on all arms, with the redistribution of traffic associated with the construction of the Onshore Cable Corridor

5.2.7. LINSIG RESULTS

5.2.7.1. The alternative DM and DS scenarios have also been assessed in a LINSIG model which reflects the proposals to signalised this junction, which are detailed in Section 4 of this report. The assessment of the signalised junction using the alternative DM and DS scenarios are set out in Table 40 and Table 41 respectively.

Table 40: Junction 2, A3 (M) Alternative DM signalised assessment

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Dell Piece East	73.4	10	16	75.1	12	20
A3 (M) South (off-slip)	48.8	6	34	75.1	14	33
B2149 Dell Piece West	56.3	10	16	50.5	8	22
A3 (M) North (off-slip)	35.0	4	36	55.3	8	33
Circulatory (east)	68.2	6	29	64.2	7	21
Circulatory (south)	54.9	4	7	75.5	8	17

Circulatory (west)	65.4	5	32	57.6	1	7
Circulatory (north)	59.0	4	8	62.5	8	13
	Cycle Time: 90s PRC: 22.6%			Cycle Time: 90s PRC: 19.3%		

5.2.7.2. The results set out demonstrate that the junction is within capacity in the AM and PM scenario when modelled using the alternative DM traffic flows. In both peaks queueing on both the A3 (M) slip roads can be contained without blocking back onto the mainline.

Table 41: Junction 2, A3 (M) Alternative DS signalised assessment

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Dell Piece East	88.6	19	33	88.2	18	36
A3 (M) South (off-slip)	53.7	7	35	88.5	21	40
B2149 Dell Piece West	86.8	18	42	59.2	10	26
A3 (M) North (off-slip)	42.1	4	42	52.9	7	32
Circulatory (east)	49.6	5	12	46.7	6	12
Circulatory (south)	54.7	2	5	81.1	69	18
Circulatory (west)	40.9	7	33	49.8	2	8
Circulatory (north)	58.7	4	4	64.6	7	13
	Cycle Time: 90s PRC: 1.5%			Cycle Time: 90s PRC: 1.7%		

5.2.7.3. As with the results set out for the alternative DM scenario, the junction is again forecast to be operating within capacity in the DS scenario. AS with in the DM and queueing on slip roads can be accommodated for without blocking the mainline of the A3 (M).

5.2.8. SUMMARY

5.2.8.1. In summary, when modelled using the existing junction layout, both the alternative DM and DS scenarios are able to operate within capacity with minimal queueing and delay anticipated. When modelled using the signalisation scheme proposed for this junction, the junction is also able to operate within capacity with minimal queueing on slip roads and circulatory carriageways.

5.3. JUNCTION 3, A3 (M)

5.3.1.1. This section sets out the alternative scenario assessments undertaken for Junction 3, A3 (M).

5.3.2. OBSERVED TRAFFIC FLOWS

5.3.2.1. The Applicant undertook Manual Classified Turning Count (MCTC) traffic surveys at Junction 2 of the A3 (M) in September 2019. The full results of these traffic surveys can be seen in Appendix 2 and are replicated in Table 42 below for reference.

Table 42: Junction 3, A3 (M) - 2019 observed turning counts

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Hulbert Road (east)	0	14	439	186	0	43	467	156
B	A3 (M) (south) off-slip	38	3	877	2	17	0	1134	0
C	B2150 Hulbert Road (west)	311	1348	6	370	279	705	25	252
D	A3 (M) (north) off-slip	203	3	295	0	312	0	502	0

5.3.2.2. As was undertaken for Junction 2, a growth factor was applied to growth the observed 2019 traffic flows to anticipated 2022 traffic levels. The locally adjusted growth factors used are set out in Table 43.

Table 43: Locally adjusted growth factor for Havant 006 (2019 – 2022)

Level	Area	Local Growth Figure (2019 – 2022)	
		AM Peak	PM Peak
E02004767	Havant 006	1.045934	1.043459

5.3.2.3. The resultant calculated 2022 traffic flows for Junction 3, A3 (M) are set out in Table 44. As there is data available regarding the committed development to be implemented by 2022 in the vicinity of this junction, no amendments have been made. As such, the 2022 turning counts set out in Table 44 has been used as the alternative DM scenario for the purpose of this assessment.

Table 44: 2022 Junction 3, A3 (M) turning counts (Alternative DM)

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Hulbert Road (east)	0	15	459	195	0	45	487	163
B	A3 (M) (south) off-slip	40	3	917	2	18	0	1183	0
C	B2150 Hulbert Road (west)	325	1410	6	387	291	736	26	263
D	A3 (M) (north) off-slip	212	3	309	0	326	0	524	0

5.3.2.4. Using the same methodology which was applied when calculating the alternative DS scenario for Junction 2, in order to in take into account the anticipated impacts of the construction of the Onshore Cable Corridor, adjustments have been made to the alternative DM scenario presented in Table 44 on the basis of the traffic redistribution set out in the DS scenarios of the SRTM outputs.

5.3.2.5. In order to calculate these adjustments, the difference in traffic flows (in PCU) between the DM scenario, and both DS scenarios was first calculated. These differences are set out in Table 45.

Table 45: SRTM flows: difference between DM scenario and DS1 / DS2

		DS1							
		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Hulbert Road (east)	0	0	33	10	0	0	-8	70
B	A3 (M) (south) off-slip	0	0	97	0	0	0	85	0
C	B2150 Hulbert Road (west)	-2	-41	0	28	4	0	0	-177
D	A3 (M) (north) off-slip	7	0	-29	0	6	0	-22	0
		DS2							
		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Hulbert Road (east)	0	0	31	11	0	0	-14	70
B	A3 (M) (south) off-slip	0	0	91	0	0	0	92	0
C	B2150 Hulbert Road (west)	-4	-39	0	29	6	0	0	-175
D	A3 (M) (north) off-slip	7	0	-27	0	9	0	-24	0

5.3.2.6. As can be seen, the differences between DS1/DS2 and the DM scenario are broadly aligned. As such, an average of these has been take forward for use in the calculation of the alternative DS scenario. The average DS flow difference when compared to the DM is set out in Table 46.

Table 46: Average difference between DM and DS scenarios

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Hulbert Road (east)	0	0	32	11	0	0	-11	70
B	A3 (M) (south) off-slip	0	0	94	0	0	0	89	0
C	B2150 Hulbert Road (west)	-3	-40	0	29	5	0	0	-176
D	A3 (M) (north) off-slip	7	0	-28	0	8	0	-23	0

5.3.2.7. In order to calculate the alternative DS scenario, the average difference between DM and DS scenarios has been applied to the alternative DM traffic flows which are set out in Table 44. The resultant traffic flows for the alternative DS scenario are set out in Table 47.

Table 47: Junction 3, A3 (M) alternative DS scenario turning counts

		AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			
From / To		A	B	C	D	A	B	C	D
A	Hulbert Road (east)	0	15	491	205	0	45	476	233
B	A3 (M) (south) off-slip	40	3	1011	2	18	0	1272	0
C	B2150 Hulbert Road (west)	322	1370	6	416	296	736	26	87
D	A3 (M) (north) off-slip	219	3	280	0	333	0	501	0

5.3.2.8. The traffic flows for the alternative DM and DS scenarios have been used in additional assessments undertaken in this section.

5.3.3. LANE SIMULATION RESULTS

5.3.3.1. The results of the lane simulation tests undertaken for Junction 3, A3 (M) in the alternative DM and DS scenarios detailed above are set out in Table 48 and Table 49 respectively.

Table 48: Junction 3, A3 (M) Alternative DM results - Lane simulation

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:30)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	1	6	1	6
	2 (ahead / right / U-turn)	0	1	0	1
A3 (M) (south)	1 (left)	1	7	2	8
	2 (left / ahead / right / U-turn)	1	7	2	8
B2150 Hulbert Road (west)	1 (left)	2	6	1	5
	2 (left / ahead / right / U-turn)	41	84	2	6
A3 (M) (north)	1 (left /ahead)	1	6	1	7
	2 (right / U-turn)	1	7	2	10

5.3.3.4. The results set out for the alternative DM scenario demonstrate that all arms in the PM peak are able to operate with minimal queueing and delay. In the AM peak, all approaches other than the offside lane of the B2150 Hulbert Road (west) arm have minimal queueing and delay. The offside lane of the B2150 Hulbert Road (west) approach is forecast to have a queue of 41 PCU (246m) in the AM peak, this is not anticipated to block back to the junction of B2150 Hulbert Road / Frendstaple Road / Tempest Avenue.

Table 49: Junction 3, A3 (M) Alternative DS results - Lane simulation

Arm	Lane	AM peak (08:30 – 08:45)		PM peak (17:30 – 17:30)	
		Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
Hulbert Road (east)	1 (left / ahead)	1	6	1	6
	2 (ahead / right / U-turn)	0	1	1	1
A3 (M) (south)	1 (left)	1	7	3	10
	2 (left / ahead / right / U-turn)	2	7	3	10
B2150 Hulbert Road (west)	1 (left)	2	6	1	4
	2 (left / ahead / right / U-turn)	33	69	2	6
A3 (M) (north)	1 (left /ahead)	1	6	1	7
	2 (right / U-turn)	1	7	2	9

5.3.3.7. The results set out for the alternative DS scenario broadly align with the alternative DM. No one approach sees an increase of more than 1 PCU (6m).

5.3.4. SIGNALISED JUNCTION MODEL RESULTS

5.3.4.1. This section sets out the junction modelling results for the alternative DM and DS scenarios when modelled using linsig. As is discussed in Section 1, these models have been run for two different lane alignments of the A3 (M) south approach, one with prohibits use of the offside lane for left turners, and one which prohibits this movement.

A3 (M) south approach: left turn prohibited from offside lane

5.3.4.2. The results for the alternative DM and DS scenarios when modelled in linsig with use of the off side lane for left turners being prohibited are set out in Table 50 and Table 51 respectively.

Table 50: Junction 3, A3(M) – Alternative DM scenario (left turn prohibited)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	58.0	1	8	63.9	1	9
A3 (M) South off-slip	65.6	10	9	101.6	43	83
B2150 Hulbert Road (West)	150.0	307	654	78.3	2	9
A3 (M) North off-slip	54.8	1	7	80.0	2	14
Circulatory (south)	141.1	86	594	100.9	24	104
	Cycle Time: 60s PRC: -56.8%			Cycle Time: 60s PRC: -12.8%		

5.3.4.3. The results set out for the alternative DM scenario forecast the junction to be operating over its theoretical capacity in both the AM and PM peak. In the AM peak, the most extensive queueing is predicted for the B2150 Hulbert Road (west) approach, for which a queue of 307 PCU (1.9km) is forecast, this will block back through the next junction. Queueing on both slip roads in the AM peak is minimal.

5.3.4.4. In the PM peak, the longest anticipated queue is for the A3 (M) south off-slip, for which a queue of 43 PCU (258m) is forecast. This queue is not forecast to block back onto the northbound mainline of the A3 (M).

Table 51: Junction 3, A3(M) – Alternative DS scenario (left turn prohibited)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	60.8	1	8	70.5	2	11
A3 (M) South off-slip	72.3	12	11	109.2	83	191
B2150 Hulbert Road (West)	146.0	286	619	80.0	2	10
A3 (M) North off-slip	49.6	1	7	76.7	2	12
Circulatory (south)	142.8	89	609	103.8	31	138
	Cycle Time: 60s PRC: -62.2%			Cycle Time: 60s PRC: -21.3%		

5.3.4.5. The results for the alternative DS scenario demonstrate a slight decrease in queueing on the B2150 Hulbert Road (west) when compared to the DM scenario. In the PM peak, queueing on the A3 (M) south off slip is forecast to increase by 40 PCU (240m) to a total of 83 PCU (498m). This queue is forecast to block back on to the northbound mainline of the A3 (M).

A3 (M) south approach: left turn permitted from offside lane

5.3.4.6. The results for the alternative DM and DS scenarios when modelled in linsig with use of the off side lane for left turners being permitted are set out in Table 52and Table 53 respectively.

Table 52: Junction 3, A3(M) – Alternative DM scenario (left turn permitted)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	56.5	1	7	59.6	1	8
A3 (M) South off-slip	87.5	11	45	68.1	10	20
B2150 Hulbert Road (West)	153.0	317	670	78.3	2	9
A3 (M) North off-slip	54.2	1	7	80.0	2	14
Circulatory (south)	40.1	5	9	66.6	9	20
	Cycle Time: 60s PRC: 2.8%			Cycle Time: 60s PRC: 32.2%		

5.3.4.7. The results for the alternative DM scenario demonstrate minimal levels of queueing and delay on all approaches in the PM peak. In the AM peak, queueing is minimal on all approaches with the exception of B2150 Hulbert Road (west), which sees queueing of 317 PCU (1.9km) in the alternative DM. This level of queueing is anticipated to block back to the next junction.

Table 53: Junction 3, A3(M) – Alternative DS scenario (left turn permitted)

	AM Peak			PM Peak		
	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)	D.o.S (%)	MMQ (pcu)	Delay (s/pcu)
Hulbert Road (East)	64.1	1	9	63.7	1	9
A3 (M) South off-slip	98.1	19	83	70.3	11	20
B2150 Hulbert Road (West)	149.2	296	648	80.3	2	10
A3 (M) North off-slip	49.0	1	7	76.7	2	12
Circulatory (south)	39.5	5	9	71.3	10	22
	Cycle Time: 60s PRC: -9.0%			Cycle Time: 60s PRC: 26.3%		

5.3.4.8. In the alternative DS scenario, as with the alternative DM scenario for this lane allocation, the junction is able to operate within its theoretical capacity in the PM peak. In the AM peak, the extensive queueing which is forecast for the B2150 Hulbert Road (west) approach decreases by 21 PCU (126m). As with the DM scenario, both of the slip roads of the A3 (M) experience minimal queueing that can be accommodated without blocking back on to the mainline of the A3 (M).

5.3.5. SUMMARY

5.3.5.1. The results set out for Junction 3, A3 (M) demonstrate that the junction is able to operate relatively well when modelled in both the alternative DM and the alternative DS scenarios using the existing layout. When modelled with the proposed signalisation scheme, considerable queueing is forecast on the A3 (M) south slip road in the PM peak in both the alternative DM and alternative DS scenarios. However, when modelled permitting the use of both lanes of this approach to turn left on to B2150 Hulbert Road (west), as the junction currently operates, queueing on this arm decreases to minimal levels and can easily be accommodated on the off-slip without blocking back onto the mainline in both the alternative DM and alternative DS scenarios.

6. CONSTRUCTION METHODOLOGY

6.1. INTRODUCTION

6.1.1.1. This Section addresses Items 3, 4, 5, 6 and 7 of HE03, all of which relate to matters pertaining to the construction methodology and movement of construction traffic.

6.2. ITEM 3

6.2.1.1. Item 3 of HE03 is as follows:

> *"For both access and egress at the Farlington playing fields with regard to oversized vehicles, traffic management should be used"*

6.2.1.2. As is stated in paragraph 2.8.7.3. of the Framework Construction Traffic Management Plan (FCTMP) (REP1-070), management of Abnormal Loads will be the responsibility of the contractor appointed to undertake the works and they will be required to comply with the statutory regulations in terms of consulting with the highway authority, police and other stakeholders. In addition, Table 6 of the FCTMP notes that at the A2030 Eastern Road access to Farlington playing fields right turns out of the car park to Eastern Road should be prohibited and that construction traffic marshalling will be required. These measures are secured via Requirement 17 as set out within the draft Development Consent Order (dDCO) (REP1-021).

6.3. ITEM 4

6.3.1.1. Item 4 of HE03 is as follows:

> *"Access by a 20t tipper/11.7m rigid vehicle at the Farlington playing fields should also take place under traffic management control"*

6.3.1.2. As with Item 3, the Applicant has addressed this issue in the FCTMP (REP1-070) and therefore it is secured by the dDCO.

6.4. ITEM 5

6.4.1.1. Item 5 of HE03 is as follows:

> *"Proposed restrictions on the movement of HGV's during peak periods will still need to be more robust and should be formalised as protective provisions in the DCO"*

6.4.1.2. Proposed restrictions on the movements of HGV's are set out in Section 3.3.2. of the FCTMP (REP1-070). The FCTMP is secured via Requirement 17 of the dDCO.

6.5. ITEM 6

6.5.1.1. Item 6 of HE03 is as follows:

"The promoter of the Aquind Interconnector should work collaboratively with Highways England to co-ordinate matters such as temporary traffic signage in the event that the construction phases of the M27 J4 – J11 Smart Motorway Project and Aquind Interconnector scheme overlap."

6.5.1.2. Permitted construction traffic routes are set out in Section 3.4 and Section 3.5 of the FCTMP (REP1-070). All of the FCTMP restrictions are secured via Requirement 17 of the dDCO.

6.6. ITEM 7

6.6.1.1. Item 7 of HE03 is as follows:

"*Once a construction contractor is appointed, the exact details of the construction phasing and duration of works should be provided"*

6.6.1.2. Highways England are included as an identified stakeholder within the Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy, included in Appendix 1 of the Framework Traffic Management Strategy (REP1-068). This means that Highways England will be kept informed of the programme throughout the construction phase of the development.

6.7. SUMMARY

6.7.1.1. This Section has addressed Items 4, 5, 6 and 7 of HE03 pertaining to construction methodology, and noted where each of HE's concerns are addressed within the FCTMP (REP1-070) and / or dDCO (REP1-021).

7. OTHER MATTERS - ITEM 9

7.1.1.1. Item 9 of HE03 is as follows:

> *"With regard to A3(M) Junction 2, the AM peak ARCADY analysis for this junction should be provided"*

7.1.1.2. The Applicant provided revised ARCADY analysis of Junction 2, A3 (M) in both the AM and PM peak in 2.2 of this Technical Note.

REFERENCES

There are no sources in the current document.

Appendix 1 – A3 (M) Junction 2 Traffic Flow Diagrams with Construction Worker Traffic

Junction 2, A3 (M) - Traffic Flow Diagram

Note:
All data is Actual Flow in PCUs, Data presented is SRTM outputs with additional flows added where discussed in the the Technical Note
Construction traffic has been added to the PM peak in the DS1 and DS2 scenarios for the appropriate movements

ELM - Do Minimum

AM	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	162	0	0	788
1003	2	0	0	880	0	21
1004	0	0	0	0	0	0
1005	0	0	459	0	0	393
1006	597	0	145	560	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	45	0	0	230
1003	47	0	0	931	0	126
1004	0	0	0	0	0	0
1005	0	0	383	0	0	305
1006	230	0	126	724	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	72	0	0	434
1003	0	0	0	740	0	23
1004	0	0	0	0	0	0
1005	0	0	631	0	0	468
1006	405	0	121	1019	0	0

EMM - DS1 - Southbound Closure

AM	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	146	0	0	796
1003	2	0	0	847	0	16
1004	0	0	0	0	0	0
1005	0	0	458	0	0	418
1006	551	0	151	605	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	36	0	0	232
1003	33	0	0	915	0	115
1004	0	0	0	0	0	0
1005	0	0	354	0	0	339
1006	246	0	141	742	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	80	0	0	398
1003	0	0	0	739	0	6
1004	0	0	0	0	0	0
1005	0	0	600	0	0	657
1006	445	0	127	1044	0	0

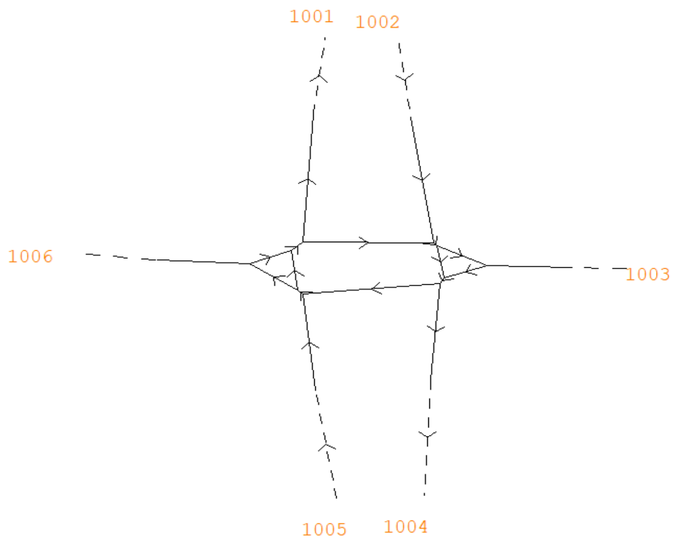
EML - DS2 - Northbound Closure

AM	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	145	0	0	796
1003	2	0	0	846	0	16
1004	0	0	0	0	0	0
1005	0	0	457	0	0	417
1006	549	0	152	606	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	35	0	0	232
1003	33	0	0	914	0	114
1004	0	0	0	0	0	0
1005	0	0	353	0	0	339
1006	248	0	141	743	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	0	0	0	0
1002	0	0	80	0	0	400
1003	0	0	0	738	0	6
1004	0	0	0	0	0	0
1005	0	0	601	0	0	653
1006	446	0	126	1044	0	0

Ref	Arm
1001	A3(M) Northbound On-slip
1002	A3(M) Southbound Off-slip
1003	Dell Piece E
1004	A3(M) Southbound On-slip
1005	A3(M) Northbound Off-slip
1006	Dell Piece W

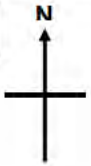


Appendix 2 – 2019 Traffic Surveys

CLASSIFIED TURNING COUNT

Project Reference		**Site ID**	Site 1	**Survey Date**	18/07/2019
Client		**Site Location**	Junction 2, A3 (M) - A3(M)/Dell Piece	**Survey Day**	Thursday
Survey Company Name	A-T-R	**Easting**	**Latitude**	**Survey Times**	0700-1000, 1200-1400, 1600-1900
Prepared by	GB	**Northing**	**Longitude**	**Weather conditions**	Sunny, Dry
Checked by	NT	**Link to location on Google Maps**	Click for location	**Incidents**	None
Comments				**Units**	

Site plan



Arm name	
A	A3 (M) North
B	Dell Piece East
C	A3 (M) South
D	Dell Piece West
E	
F	
G	

Matrices 8-9

CLASSIFIED TURNING COUNT	Time period	from	08:00	Average?	N	Arm order?	A
		to	09:00				E

Class: Units:

Jct Node Number		Arm name	A	B	C	D	E	F	G	Total
			TO ARM							
FROM ARM	A	A3 (M) North		159	1	112				**272**
	B	Dell Piece East	317		414	189				**920**
	C	A3 (M) South	1	163	2	242				**408**
	D	Dell Piece West	228	306	561	2				**1097**
	E									
	F									
	G									
Total			**546**	**628**	**978**	**545**				**2697**

Matrices 17-18

CLASSIFIED TURNING COUNT	Time period	from	17:00	Average?	N	Arm order?
		to	18:00			

Class: **Units:**

Jct Node Number		Arm name	A	B	C	D	E	F	G	Total
FROM ARM	A	A3 (M) North		355	3	231				589
	B	Dell Piece East	205		317	311				833
	C	A3 (M) South		372		523				895
	D	Dell Piece West	166	234	377	5				782
	E									
	F									
	G									
Total			371	961	697	1070				3099

Class: **Units:**

Site information

Cells which require no user input

Cells which require user input

CLASSIFIED TURNING COUNT

Project Reference		Site ID	Site 2			Survey Date	18/07/2019
Client		Site Location	Junction 3, A3 (M) - A3(M)/Hulbert Road			Survey Day	Thursday
Survey Company Name	A-T-R	Easting		Latitude		Survey Times	0700-1000, 1200-1400, 1600-1900
Prepared by	GB	Northing		Longitude		Weather conditions	Sunny, Dry
Checked by	NT	Link to location on Google Maps	Click for location			Incidents	None
Comments						Units	

Site plan

N

Arm name	
A	A3 (M) North
B	Hulbert Road East
C	A3 (M) South
D	Hulbert Road West
E	
F	
G	

Matrices 8-9

CLASSIFIED TURNING COUNT	Time period	from	08:00	Average?	N	Arm order?
		to	09:00			

Class: **Units:**

	Jct Node Number	Arm name	TO ARM A	B	C	D	E	F	G	Total
FROM ARM	A	A3 (M) North		203	3	295				501
	B	Hulbert Road East	186		14	439				639
	C	A3 (M) South	2	38	3	877				920
	D	Hulbert Road West	370	311	1348	6				2035
	E									
	F									
	G									
Total			558	552	1368	1617				4095

Matrices 17-18

CLASSIFIED TURNING COUNT	Time period	from	17:00	Average?	N	Arm order?
		to	18:00			

Class: **Units:**

	Jct Node Number	Arm name	A	B	C	TO ARM D	E	F	G	Total
FROM ARM	A	A3 (M) North		312		502				**814**
	B	Hulbert Road East	156		43	467				**666**
	C	A3 (M) South		17		1134				**1151**
	D	Hulbert Road West	252	279	705	25				**1261**
	E									
	F									
	G									
		Total	**408**	**608**	**748**	**2128**				**3892**

Appendix 3 – Adjusted Traffic Flows for A3 (M) Junction 3

Junction 3, A3 (M) Adjusted Turning Counts

Note:
All data is Actual Flow in PCUs, data presented is SRTM outputs with additional flows added where discussed within the Technical Note

ELM - Do Minimum

AM	1001	1002	1003	1004	1005	1006
1001	0	0	574	853	399	0
1002	252	0	0	733	0	0
1003	0	0	0	0	0	0
1004	257	0	404	0	15	0
1005	0	0	0	0	0	0
1006	1063	0	0	42	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	440	652	456	0
1002	263	0	0	837	0	0
1003	0	0	0	0	0	0
1004	259	0	149	0	0	0
1005	0	0	0	0	0	0
1006	845	0	0	0	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	818	52	703	0
1002	314	0	0	1150	0	0
1003	0	0	0	0	0	0
1004	464	0	141	0	48	0
1005	0	0	0	0	0	0
1006	1141	0	0	19	0	0

EMM - DS1 - Southbound Closure

AM	1001	1002	1003	1004	1005	1006
1001	0	0	603	851	358	0
1002	223	0	0	741	0	0
1003	0	0	0	0	0	0
1004	290	0	415	0	15	0
1005	0	0	0	0	0	0
1006	1160	0	0	42	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	320	605	329	0
1002	239	0	0	884	0	0
1003	0	0	0	0	0	0
1004	269	0	208	0	0	0
1005	0	0	0	0	0	0
1006	859	0	0	0	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	641	56	703	0
1002	292	0	0	1155	0	0
1003	0	0	0	0	0	0
1004	457	0	211	0	48	0
1005	0	0	0	0	0	0
1006	1226	0	0	19	0	0

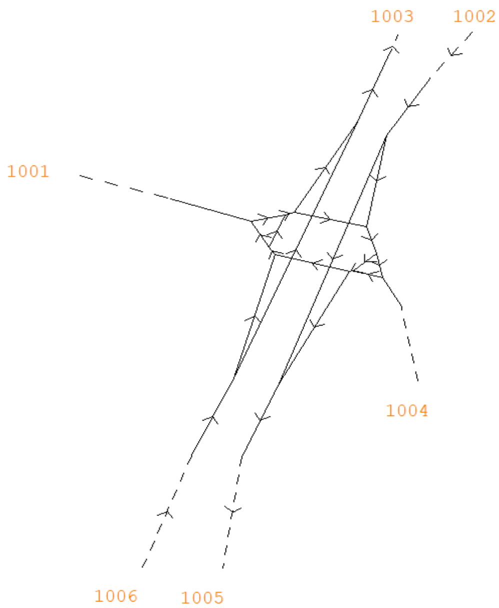
EML - DS2 - Northbound Closure

AM	1001	1002	1003	1004	1005	1006
1001	0	0	604	849	360	0
1002	224	0	0	740	0	0
1003	0	0	0	0	0	0
1004	289	0	416	0	15	0
1005	0	0	0	0	0	0
1006	1154	0	0	42	0	0

IP	1001	1002	1003	1004	1005	1006
1001	0	0	319	605	324	0
1002	239	0	0	884	0	0
1003	0	0	0	0	0	0
1004	272	0	208	0	0	0
1005	0	0	0	0	0	0
1006	858	0	0	0	0	0

PM	1001	1002	1003	1004	1005	1006
1001	0	0	643	58	703	0
1002	290	0	0	1159	0	0
1003	0	0	0	0	0	0
1004	450	0	211	0	48	0
1005	0	0	0	0	0	0
1006	1233	0	0	19	0	0

Ref	Arm
1001	B2150 Hulbert Road (west)
1002	A3(M) Southbound Off-slip
1003	A3(M) Northbound On-slip
1004	Hulbert Road (east)
1005	A3(M) Southbound On-slip
1006	A3(M) Northbound Off-slip



Appendix 4 – ARCADY Outputs for Lane Simulation Assessments

Junctions 9

ARCADY 9 - Roundabout Module

Filename: J2.j9
Path: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Reports\Highways England Response\20-08-21 HE Note TN03\HE Review 301120\App 4 - Lane Sim
Report generation date: 01/12/2020 11:38:08

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
[Lane Simulation] - ELM - DM										
Arm 1	D3	25.5	84.26		F	D4	5.9	25.30		D
Arm 2		2.1	8.10		A		4.4	11.77		B
Arm 3		3.9	9.38		A		44.3	83.09		F
Arm 4		7.8	26.69		D		1.1	7.32		A
[Lane Simulation] - EMM - DS1										
Arm 1	D5	15.6	53.37		F	D6	5.6	24.09		C
Arm 2		2.3	8.11		A		5.6	13.27		B
Arm 3		3.7	9.13		A		42.1	74.02		F
Arm 4		8.4	29.52		D		1.0	6.94		A
[Lane Simulation] - EML - DS2										
Arm 1	D7	16.6	58.38		F	D8	4.6	22.00		C
Arm 2		2.3	8.00		A		5.3	13.43		B
Arm 3		4.0	8.89		A		48.2	87.29		F
Arm 4		8.9	29.68		D		1.2	6.82		A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay.

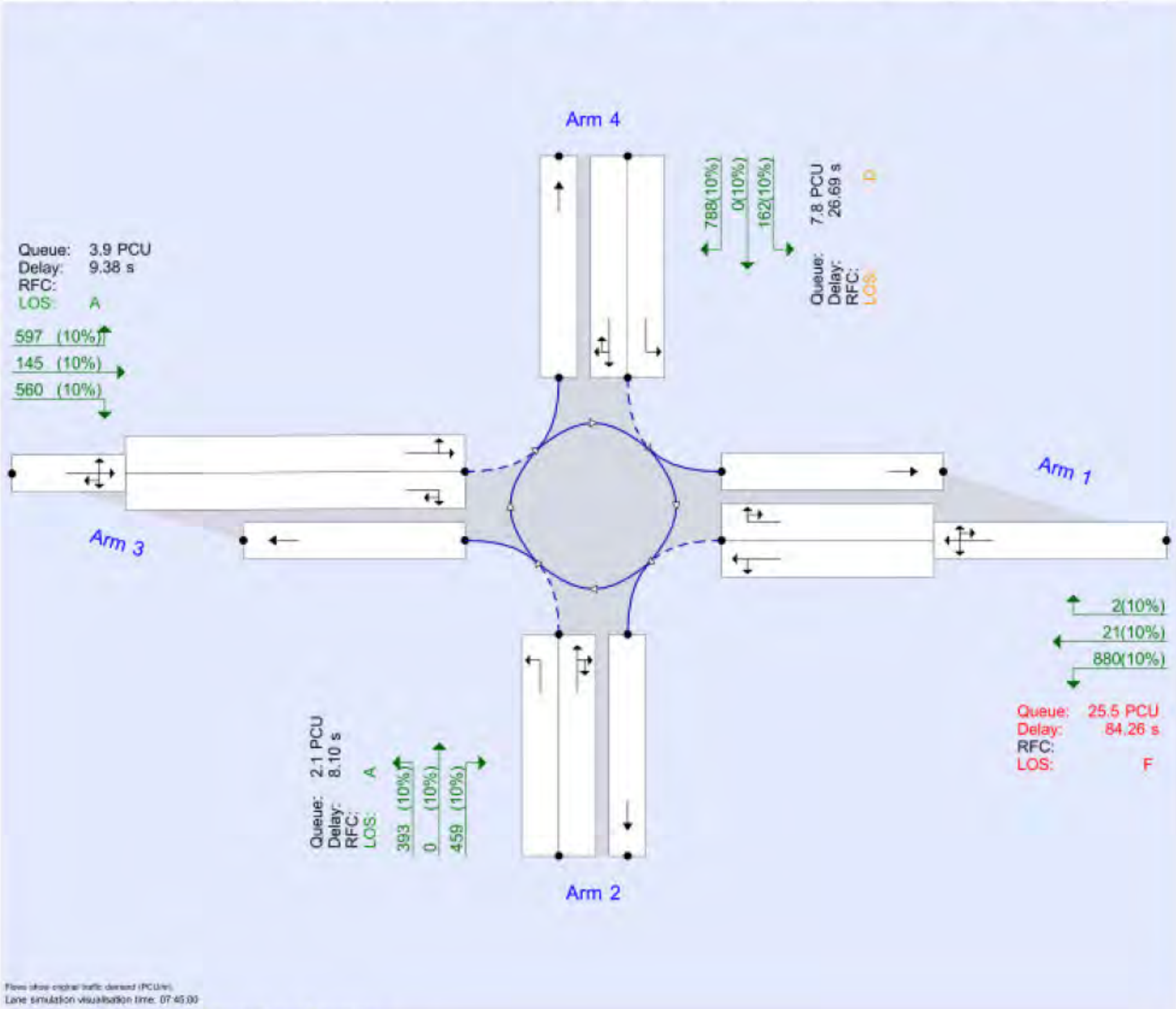
File summary

File Description

Title	Junction 2, A3(M)
Location	
Site number	
Date	26/09/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	62100616
Enumerator	CORP\UKAJT009
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			188931048	183	37.27

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓
D4	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓
D5	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓
D6	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓
D7	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓
D8	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

ELM - DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	30.09	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Dell Piece East	
2	A3(M) south	
3	B2149 Dell Piece West	
4	A3(M) north	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.50	7.60	23.4	45.0	125.0	7.0	
2	6.00	6.20	0.1	999.0	125.0	5.0	
3	3.50	8.50	26.4	50.0	125.0	10.0	
4	6.00	6.50	22.0	999.0	125.0	5.0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.891	2671
2	0.914	2342
3	1.100	3017
4	0.994	2574

The slope and intercept shown above include any corrections and adjustments.

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2, 3	✓	5.00		1000	99999	
			2	1, 4	✓	5.00		1000	99999	
		2	1	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	3		Infinity		1000	99999	
			2	1, 2, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	1, 4	✓	8.00		1000	99999	
			2	2, 3	✓	8.00		1000	99999	
		2	1	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
4	Entry	1	1	1		Infinity		1000	99999	
			2	2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.445	1335
			2	0.445	1335
2	Entry	1	1	0.457	1171
			2	0.457	1171
3	Entry	1	1	0.550	1509
			2	0.550	1509
4	Entry	1	1	0.497	1287
			2	0.497	1287

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm			
			1	2	3	4
1	1	1		✓	✓	
		2	✓			✓
	2	1	✓	✓	✓	✓
2	1	1			✓	
		2	✓	✓		✓
3	1	1	✓			✓
		2		✓	✓	
	2	1	✓	✓	✓	✓
4	1	1	✓			
		2		✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	903	100.000
2		ONE HOUR	✓	852	100.000
3		ONE HOUR	✓	1302	100.000
4		ONE HOUR	✓	950	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	880	21	2
	2	459	0	393	0
	3	145	560	0	597
	4	162	0	788	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	84.26	25.5	F	828	1243
2	8.10	2.1	A	785	1177
3	9.38	3.9	A	1192	1788
4	26.69	7.8	D	865	1298

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	686	171	1009	685	672	574	0.0	2.4	12.441	B
2	644	161	608	645	643	1086	0.0	1.2	5.988	A
3	973	243	348	971	975	905	0.0	1.6	4.997	A
4	704	176	876	707	704	443	0.0	1.9	9.176	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	803	201	1213	800	798	692	2.4	4.8	19.885	C
2	770	193	730	766	758	1283	1.2	1.6	6.577	A
3	1167	292	420	1166	1161	1077	1.6	2.2	6.070	A
4	848	212	1052	854	848	534	1.9	3.1	12.691	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1000	250	1485	956	938	848	4.8	19.0	52.014	F
2	941	235	901	947	933	1541	1.6	2.1	8.102	A
3	1425	356	510	1425	1417	1338	2.2	3.9	8.423	A
4	1047	262	1283	1050	1030	652	3.1	7.8	24.598	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1004	251	1467	977	976	849	19.0	25.5	84.259	F
2	941	235	878	949	937	1565	2.1	1.7	7.955	A
3	1434	358	516	1441	1432	1311	3.9	3.7	9.379	A
4	1033	258	1289	1028	1040	668	7.8	7.5	26.695	D

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	807	202	1225	845	883	683	25.5	7.5	54.901	F
2	765	191	735	764	762	1335	1.7	1.4	6.739	A
3	1179	295	407	1176	1177	1092	3.7	2.2	6.351	A
4	849	212	1048	860	874	535	7.5	2.8	15.181	C

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	671	168	997	673	700	582	7.5	2.2	16.337	C
2	647	162	594	643	637	1076	1.4	1.3	5.947	A
3	974	244	349	976	981	889	2.2	1.4	5.048	A
4	711	178	874	705	715	451	2.8	2.1	9.430	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	685	1000	0.685	683	670	0.0	2.0	10.246	B
			2	1, 4	1	1000	0.001	1	2	0.0	0.0	4.909	A
		2	1	(1, 2, 3, 4)	686			686	679	0.0	0.4	2.188	A
	Exit	1	1		574			574	575	0.0	0.0	0.000	A
2	Entry	1	1	3	298	1000	0.298	298	296	0.0	0.6	5.593	A
			2	1, 2, 4	345	1000	0.345	347	347	0.0	0.7	6.327	A
	Exit	1	1		1086			1086	1075	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	553	1317	0.420	552	555	0.0	1.0	5.315	A
			2	2, 3	420	1317	0.319	420	420	0.0	0.6	4.461	A
		2	1	(1, 2, 3, 4)	973			973	981	0.0	0.0	0.050	A
	Exit	1	1		905			905	896	0.0	0.0	0.000	A
4	Entry	1	1	1	118	1000	0.118	117	120	0.0	0.2	4.431	A
			2	2, 3, 4	587	1000	0.587	590	585	0.0	1.7	10.145	B
	Exit	1	1		443			443	448	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	794	1000	0.794	799	797	2.0	2.7	12.514	B
			2	1, 4	1	1000	0.001	1	1	0.0	0.0	3.404	A
		2	1	(1, 2, 3, 4)	803			796	801	0.4	2.2	7.342	A
	Exit	1	1		692			692	685	0.0	0.0	0.000	A
2	Entry	1	1	3	350	1000	0.350	348	347	0.6	0.7	6.286	A
			2	1, 2, 4	420	1000	0.420	419	412	0.7	0.9	6.820	A
	Exit	1	1		1283			1283	1275	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	664	1278	0.519	662	663	1.0	1.4	6.584	A
			2	2, 3	504	1278	0.394	504	499	0.6	0.8	5.148	A
		2	1	(1, 2, 3, 4)	1167			1167	1163	0.0	0.0	0.103	A
	Exit	1	1		1077			1077	1070	0.0	0.0	0.000	A
4	Entry	1	1	1	145	1000	0.145	145	145	0.2	0.2	4.756	A
			2	2, 3, 4	703	1000	0.703	709	703	1.7	2.9	14.316	B
	Exit	1	1		534			534	536	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	959	1000	0.959	954	935	2.7	4.7	16.108	C
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	3.889	A
		2	1	(1, 2, 3, 4)	1000			960	946	2.2	14.3	35.867	E
	Exit	1	1		848			848	831	0.0	0.0	0.000	A
2	Entry	1	1	3	436	1000	0.436	439	431	0.7	1.0	7.363	A
			2	1, 2, 4	505	1000	0.505	508	502	0.9	1.2	8.737	A
	Exit	1	1		1541			1541	1522	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	818	1228	0.666	816	807	1.4	2.2	8.739	A
			2	2, 3	609	1228	0.496	609	609	0.8	1.4	6.449	A
		2	1	(1, 2, 3, 4)	1425			1427	1422	0.0	0.3	0.666	A
	Exit	1	1		1338			1338	1309	0.0	0.0	0.000	A
4	Entry	1	1	1	174	1000	0.174	174	173	0.2	0.3	4.677	A
			2	2, 3, 4	873	1000	0.873	876	856	2.9	7.6	28.570	D
	Exit	1	1		652			652	654	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	975	1000	0.975	975	973	4.7	4.6	16.952	C
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	4.257	A
		2	1	(1, 2, 3, 4)	1004			977	975	14.3	20.9	67.235	F
	Exit	1	1		849			849	844	0.0	0.0	0.000	A
2	Entry	1	1	3	432	1000	0.432	435	430	1.0	0.6	7.251	A
			2	1, 2, 4	509	1000	0.509	514	507	1.2	1.0	8.555	A
	Exit	1	1		1565			1565	1566	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	822	1225	0.671	825	817	2.2	2.1	9.526	A
			2	2, 3	619	1225	0.505	615	615	1.4	1.4	6.797	A
		2	1	(1, 2, 3, 4)	1434			1440	1431	0.3	0.3	1.024	A
	Exit	1	1		1311			1311	1316	0.0	0.0	0.000	A
4	Entry	1	1	1	176	1000	0.176	176	176	0.3	0.3	4.794	A
			2	2, 3, 4	858	1000	0.858	851	864	7.6	7.3	31.140	D
	Exit	1	1		668			668	658	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	839	1000	0.839	843	881	4.6	3.2	14.804	B
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	3.361	A
		2	1	(1, 2, 3, 4)	807			841	877	20.9	4.3	40.446	E
	Exit	1	1		683			683	686	0.0	0.0	0.000	A
2	Entry	1	1	3	360	1000	0.360	359	355	0.6	0.6	6.373	A
			2	1, 2, 4	406	1000	0.406	405	407	1.0	0.9	7.058	A
	Exit	1	1		1335			1335	1370	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	666	1285	0.518	664	667	2.1	1.2	6.847	A
			2	2, 3	512	1285	0.399	512	509	1.4	1.0	5.404	A
		2	1	(1, 2, 3, 4)	1179			1178	1172	0.3	0.1	0.136	A
	Exit	1	1		1092			1092	1102	0.0	0.0	0.000	A
4	Entry	1	1	1	147	1000	0.147	147	148	0.3	0.2	4.514	A
			2	2, 3, 4	702	1000	0.702	713	726	7.3	2.6	17.396	C
	Exit	1	1		535			535	538	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	673	1000	0.672	671	699	3.2	2.0	10.904	B
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	3.833	A
		2	1	(1, 2, 3, 4)	671			674	695	4.3	0.2	5.599	A
	Exit	1	1		582			582	578	0.0	0.0	0.000	A
2	Entry	1	1	3	299	1000	0.299	297	296	0.6	0.7	5.603	A
			2	1, 2, 4	348	1000	0.348	347	341	0.9	0.6	6.245	A
	Exit	1	1		1076			1076	1103	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	559	1317	0.425	560	561	1.2	0.9	5.303	A
			2	2, 3	416	1317	0.316	417	420	1.0	0.6	4.560	A
		2	1	(1, 2, 3, 4)	974			975	978	0.1	0.0	0.063	A
	Exit	1	1		889			889	902	0.0	0.0	0.000	A
4	Entry	1	1	1	126	1000	0.126	125	124	0.2	0.2	4.596	A
			2	2, 3, 4	585	1000	0.585	580	591	2.6	1.9	10.454	B
	Exit	1	1		451			451	451	0.0	0.0	0.000	A

ELM - DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	41.96	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	763	100.000
2		ONE HOUR	✓	1099	100.000
3		ONE HOUR	✓	1545	100.000
4		ONE HOUR	✓	506	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	740	23	0
	2	631	0	468	0
	3	121	1019	0	405
	4	72	0	434	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	25.30	5.9	D	698	1044
2	11.77	4.4	B	1016	1523
3	83.09	44.3	F	1419	2128
4	7.32	1.1	A	464	697

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	576	144	1084	576	570	624	0.0	1.5	9.603	A
2	835	209	338	832	824	1322	0.0	1.8	6.884	A
3	1158	290	480	1161	1155	691	0.0	2.4	7.552	A
4	374	93	1334	375	383	307	0.0	0.6	5.834	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	674	169	1305	673	677	742	1.5	2.4	12.407	B
2	989	247	412	991	986	1565	1.8	2.4	8.388	A
3	1391	348	569	1387	1370	834	2.4	5.4	12.157	B
4	457	114	1591	456	457	366	0.6	0.8	6.375	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	840	210	1555	848	823	907	2.4	5.3	22.966	C
2	1217	304	508	1214	1210	1894	2.4	4.4	11.656	B
3	1696	424	699	1620	1605	1023	5.4	29.2	42.779	E
4	564	141	1898	564	556	421	0.8	1.1	7.148	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	842	210	1570	838	839	906	5.3	5.9	25.304	D
2	1221	305	501	1226	1220	1907	4.4	3.8	11.771	B
3	1703	426	699	1647	1643	1028	29.2	44.3	83.088	F
4	554	138	1920	555	554	426	1.1	1.0	7.315	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	677	169	1370	676	698	747	5.9	2.5	14.521	B
2	1000	250	419	998	1001	1627	3.8	2.5	8.575	A
3	1398	349	567	1468	1533	851	44.3	9.6	50.090	F
4	462	115	1656	461	458	379	1.0	0.9	6.357	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	567	142	1088	564	572	623	2.5	1.8	9.906	A
2	831	208	340	833	830	1312	2.5	1.5	6.853	A
3	1166	292	480	1158	1190	693	9.6	3.0	9.636	A
4	377	94	1336	375	381	302	0.9	0.6	5.682	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	576	1000	0.576	576	570	0.0	1.4	8.627	A
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	576			576	575	0.0	0.1	0.968	A
	Exit	1	1		624			624	618	0.0	0.0	0.000	A
2	Entry	1	1	3	353	1022	0.345	353	351	0.0	0.6	5.936	A
			2	1, 2, 4	482	1022	0.472	480	472	0.0	1.1	7.589	A
	Exit	1	1		1322			1322	1315	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	398	1245	0.319	397	392	0.0	0.6	4.757	A
			2	2, 3	762	1245	0.612	764	763	0.0	1.7	8.245	A
		2	1	(1, 2, 3, 4)	1158			1160	1164	0.0	0.1	0.486	A
	Exit	1	1		691			691	697	0.0	0.0	0.000	A
4	Entry	1	1	1	55	1000	0.055	55	55	0.0	0.1	4.247	A
			2	2, 3, 4	319	1000	0.319	320	328	0.0	0.5	6.098	A
	Exit	1	1		307			307	301	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	673	1000	0.673	673	677	1.4	1.9	10.163	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	674			673	679	0.1	0.5	2.230	A
	Exit	1	1		742			742	739	0.0	0.0	0.000	A
2	Entry	1	1	3	422	1006	0.419	422	420	0.6	0.9	6.800	A
			2	1, 2, 4	567	1006	0.564	569	566	1.1	1.5	9.565	A
	Exit	1	1		1565			1565	1557	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	474	1196	0.397	474	470	0.6	0.8	5.785	A
			2	2, 3	915	1196	0.765	912	900	1.7	3.4	11.767	B
		2	1	(1, 2, 3, 4)	1391			1389	1378	0.1	1.2	2.405	A
	Exit	1	1		834			834	832	0.0	0.0	0.000	A
4	Entry	1	1	1	65	1000	0.065	64	65	0.1	0.1	4.216	A
			2	2, 3, 4	392	1000	0.392	392	392	0.5	0.6	6.732	A
	Exit	1	1		366			366	362	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	845	1000	0.845	848	823	1.9	3.1	13.224	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	840			845	828	0.5	2.2	9.692	A
	Exit	1	1		907			907	900	0.0	0.0	0.000	A
2	Entry	1	1	3	514	1000	0.514	515	515	0.9	1.1	8.474	A
			2	1, 2, 4	703	1000	0.702	699	694	1.5	3.2	13.993	B
	Exit	1	1		1894			1894	1858	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	548	1124	0.487	547	545	0.8	1.2	7.530	A
			2	2, 3	1075	1124	0.957	1073	1060	3.4	6.6	19.781	C
		2	1	(1, 2, 3, 4)	1696			1623	1620	1.2	21.3	26.986	D
	Exit	1	1		1023			1023	1016	0.0	0.0	0.000	A
4	Entry	1	1	1	82	1000	0.082	82	81	0.1	0.1	4.144	A
			2	2, 3, 4	483	1000	0.483	482	475	0.6	1.1	7.658	A
	Exit	1	1		421			421	420	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	841	1000	0.841	838	839	3.1	3.3	13.585	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	842			841	840	2.2	2.7	11.725	B
	Exit	1	1		906			906	907	0.0	0.0	0.000	A
2	Entry	1	1	3	523	1001	0.522	527	517	1.1	1.1	8.220	A
			2	1, 2, 4	699	1001	0.698	699	703	3.2	2.7	14.386	B
	Exit	1	1		1907			1907	1901	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	554	1125	0.493	554	556	1.2	1.3	8.307	A
			2	2, 3	1092	1125	0.971	1094	1087	6.6	6.8	22.411	C
		2	1	(1, 2, 3, 4)	1703			1647	1644	21.3	36.1	65.397	F
	Exit	1	1		1028			1028	1018	0.0	0.0	0.000	A
4	Entry	1	1	1	79	1000	0.079	79	78	0.1	0.1	4.459	A
			2	2, 3, 4	475	1000	0.475	476	475	1.1	0.9	7.783	A
	Exit	1	1		426			426	430	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	677	1000	0.677	676	698	3.3	2.0	10.750	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	677			677	693	2.7	0.5	3.861	A
	Exit	1	1		747			747	759	0.0	0.0	0.000	A
2	Entry	1	1	3	433	1006	0.430	431	425	1.1	1.0	7.226	A
			2	1, 2, 4	566	1006	0.563	567	576	2.7	1.5	9.580	A
	Exit	1	1		1627			1627	1692	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	494	1197	0.413	495	517	1.3	0.8	7.000	A
			2	2, 3	968	1197	0.809	973	1016	6.8	3.8	17.646	C
		2	1	(1, 2, 3, 4)	1398			1463	1519	36.1	5.0	36.531	E
	Exit	1	1		851			851	841	0.0	0.0	0.000	A
4	Entry	1	1	1	65	1000	0.065	65	63	0.1	0.1	4.299	A
			2	2, 3, 4	397	1000	0.397	397	395	0.9	0.9	6.687	A
	Exit	1	1		379			379	397	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	566	1000	0.566	564	572	2.0	1.5	8.758	A
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	567			566	570	0.5	0.3	1.181	A
	Exit	1	1		623			623	621	0.0	0.0	0.000	A
2	Entry	1	1	3	354	1023	0.346	353	353	1.0	0.6	6.057	A
			2	1, 2, 4	478	1023	0.467	480	477	1.5	0.9	7.442	A
	Exit	1	1		1312			1312	1346	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	395	1245	0.317	394	399	0.8	0.6	4.873	A
			2	2, 3	769	1245	0.618	765	791	3.8	2.1	9.294	A
		2	1	(1, 2, 3, 4)	1166			1164	1182	5.0	0.3	1.991	A
	Exit	1	1		693			693	698	0.0	0.0	0.000	A
4	Entry	1	1	1	53	1000	0.053	52	53	0.1	0.1	4.344	A
			2	2, 3, 4	324	1000	0.324	323	328	0.9	0.5	5.898	A
	Exit	1	1		302			302	307	0.0	0.0	0.000	A

EMM - DS1, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	23.35	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity
[same as above]

Lane Simulation: Arm options
[same as above]

Lanes
[same as above]

Entry Lane slope and intercept
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	865	100.000
2		ONE HOUR	✓	876	100.000
3		ONE HOUR	✓	1307	100.000
4		ONE HOUR	✓	942	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	847	16	2
	2	458	0	418	0
	3	151	605	0	551
	4	146	0	796	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	53.37	15.6	F	793	1190
2	8.11	2.3	A	801	1202
3	9.13	3.7	A	1193	1789
4	29.52	8.4	D	865	1298

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	649	162	1052	652	645	550	0.0	1.8	11.131	B
2	646	162	611	649	655	1093	0.0	1.0	5.910	A
3	984	246	336	982	979	924	0.0	1.5	4.883	A
4	713	178	897	704	705	420	0.0	2.2	9.601	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	764	191	1261	766	770	675	1.8	3.7	17.035	C
2	791	198	730	791	783	1297	1.0	1.6	6.667	A
3	1173	293	416	1174	1177	1104	1.5	2.0	6.011	A
4	838	209	1092	844	839	498	2.2	2.8	12.877	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	962	240	1535	932	921	833	3.7	12.6	35.924	E
2	978	245	894	977	960	1572	1.6	2.0	7.610	A
3	1429	357	508	1427	1433	1363	2.0	3.5	8.429	A
4	1044	261	1333	1035	1019	603	2.8	8.2	23.496	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	960	240	1545	946	947	849	12.6	15.6	53.373	F
2	977	244	905	977	987	1586	2.0	2.3	8.113	A
3	1423	356	521	1424	1442	1362	3.5	3.7	9.134	A
4	1039	260	1351	1044	1028	594	8.2	8.4	29.517	D

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	769	192	1262	788	814	676	15.6	4.8	32.721	D
2	773	193	727	777	785	1322	2.3	1.2	6.834	A
3	1181	295	409	1186	1186	1095	3.7	2.0	6.281	A
4	845	211	1093	845	873	502	8.4	3.4	15.630	C

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	655	164	1054	656	669	551	4.8	2.3	13.414	B
2	644	161	613	642	652	1096	1.2	1.3	6.129	A
3	966	242	330	968	982	925	2.0	1.3	4.931	A
4	713	178	894	711	720	404	3.4	2.1	9.578	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	647	1000	0.646	650	643	0.0	1.6	9.512	A
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	3.853	A
		2	1	(1, 2, 3, 4)	649			649	651	0.0	0.2	1.624	A
	Exit	1	1		550			550	557	0.0	0.0	0.000	A
2	Entry	1	1	3	312	1000	0.312	315	317	0.0	0.5	5.919	A
			2	1, 2, 4	334	1000	0.334	334	338	0.0	0.5	5.902	A
	Exit	1	1		1093			1093	1084	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	529	1324	0.400	528	527	0.0	0.8	5.006	A
			2	2, 3	454	1324	0.343	454	452	0.0	0.7	4.706	A
		2	1	(1, 2, 3, 4)	984			984	985	0.0	0.0	0.016	A
	Exit	1	1		924			924	927	0.0	0.0	0.000	A
4	Entry	1	1	1	107	1000	0.107	107	106	0.0	0.1	4.423	A
			2	2, 3, 4	606	1000	0.606	598	599	0.0	2.0	10.509	B
	Exit	1	1		420			420	416	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	768	1000	0.768	765	769	1.6	2.7	11.796	B
			2	1, 4	0.96	1000	0.001	1	1	0.0	0.0	3.051	A
		2	1	(1, 2, 3, 4)	764			769	775	0.2	1.0	5.228	A
	Exit	1	1		675			675	670	0.0	0.0	0.000	A
2	Entry	1	1	3	375	1000	0.375	376	375	0.5	0.8	6.357	A
			2	1, 2, 4	416	1000	0.416	415	408	0.5	0.9	6.950	A
	Exit	1	1		1297			1297	1302	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	629	1280	0.492	629	629	0.8	1.2	6.064	A
			2	2, 3	545	1280	0.426	547	547	0.7	0.8	5.639	A
		2	1	(1, 2, 3, 4)	1173			1175	1179	0.0	0.0	0.144	A
	Exit	1	1		1104			1104	1099	0.0	0.0	0.000	A
4	Entry	1	1	1	128	1000	0.128	129	130	0.1	0.2	4.690	A
			2	2, 3, 4	710	1000	0.710	716	710	2.0	2.6	14.358	B
	Exit	1	1		498			498	498	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	932	1000	0.932	930	919	2.7	4.2	14.669	B
			2	1, 4	2	1000	0.002	2	3	0.0	0.0	4.197	A
		2	1	(1, 2, 3, 4)	962			934	928	1.0	8.4	21.238	C
	Exit	1	1		833			833	831	0.0	0.0	0.000	A
2	Entry	1	1	3	472	1000	0.472	471	458	0.8	1.1	7.222	A
			2	1, 2, 4	507	1000	0.507	506	502	0.9	0.9	7.963	A
	Exit	1	1		1572			1572	1563	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	769	1229	0.626	765	770	1.2	2.0	8.489	A
			2	2, 3	657	1229	0.534	662	663	0.8	1.0	7.136	A
		2	1	(1, 2, 3, 4)	1429			1426	1437	0.0	0.5	0.567	A
	Exit	1	1		1363			1363	1332	0.0	0.0	0.000	A
4	Entry	1	1	1	161	1000	0.161	162	163	0.2	0.2	4.856	A
			2	2, 3, 4	883	1000	0.883	872	856	2.6	8.0	26.968	D
	Exit	1	1		603			603	607	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	946	1000	0.946	945	945	4.2	4.3	15.954	C
			2	1, 4	1	1000	0.001	1	2	0.0	0.0	3.632	A
		2	1	(1, 2, 3, 4)	960			947	947	8.4	11.2	37.347	E
	Exit	1	1		849			849	837	0.0	0.0	0.000	A
2	Entry	1	1	3	454	1000	0.454	458	458	1.1	0.8	7.702	A
			2	1, 2, 4	523	1000	0.523	520	509	0.9	1.5	8.480	A
	Exit	1	1		1586			1586	1597	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	765	1222	0.626	764	772	2.0	1.9	8.781	A
			2	2, 3	662	1222	0.542	660	669	1.0	1.5	7.341	A
		2	1	(1, 2, 3, 4)	1423			1427	1443	0.5	0.3	1.027	A
	Exit	1	1		1362			1362	1345	0.0	0.0	0.000	A
4	Entry	1	1	1	160	1000	0.160	159	158	0.2	0.3	4.592	A
			2	2, 3, 4	879	1000	0.879	885	869	8.0	8.1	34.092	D
	Exit	1	1		594			594	605	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	783	1000	0.783	786	812	4.3	2.6	13.766	B
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	4.530	A
		2	1	(1, 2, 3, 4)	769			785	807	11.2	2.2	19.219	C
	Exit	1	1		676			676	683	0.0	0.0	0.000	A
2	Entry	1	1	3	366	1000	0.366	369	373	0.8	0.5	6.513	A
			2	1, 2, 4	407	1000	0.407	407	413	1.5	0.7	7.127	A
	Exit	1	1		1322			1322	1348	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	630	1284	0.491	636	635	1.9	1.0	6.530	A
			2	2, 3	552	1284	0.430	550	551	1.5	0.9	5.678	A
		2	1	(1, 2, 3, 4)	1181			1182	1180	0.3	0.0	0.154	A
	Exit	1	1		1095			1095	1128	0.0	0.0	0.000	A
4	Entry	1	1	1	133	1000	0.133	133	132	0.3	0.2	4.587	A
			2	2, 3, 4	712	1000	0.712	712	741	8.1	3.2	17.632	C
	Exit	1	1		502			502	499	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	654	1000	0.654	654	667	2.6	1.9	10.452	B
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	4.141	A
		2	1	(1, 2, 3, 4)	655			655	666	2.2	0.4	3.049	A
	Exit	1	1		551			551	564	0.0	0.0	0.000	A
2	Entry	1	1	3	312	1000	0.312	313	313	0.5	0.5	5.965	A
			2	1, 2, 4	332	1000	0.332	328	338	0.7	0.8	6.281	A
	Exit	1	1		1096			1096	1108	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	514	1327	0.387	516	530	1.0	0.7	5.208	A
			2	2, 3	453	1327	0.341	453	452	0.9	0.6	4.537	A
		2	1	(1, 2, 3, 4)	966			967	979	0.0	0.0	0.032	A
	Exit	1	1		925			925	933	0.0	0.0	0.000	A
4	Entry	1	1	1	109	1000	0.109	110	111	0.2	0.1	4.426	A
			2	2, 3, 4	604	1000	0.604	601	609	3.2	2.0	10.520	B
	Exit	1	1		404			404	417	0.0	0.0	0.000	A

EMM - DS1, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	38.37	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	745	100.000
2		ONE HOUR	✓	1257	100.000
3		ONE HOUR	✓	1616	100.000
4		ONE HOUR	✓	478	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	739	6	0
	2	600	0	657	0
	3	127	1044	0	445
	4	80	0	398	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	24.09	5.6	C	688	1033
2	13.27	5.6	B	1158	1737
3	74.02	42.1	F	1482	2224
4	6.94	1.0	A	443	665

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	578	145	1087	578	558	613	0.0	1.4	9.456	A
2	980	245	300	977	943	1363	0.0	2.5	7.343	A
3	1225	306	459	1226	1218	818	0.0	2.6	7.337	A
4	358	89	1341	360	357	345	0.0	0.5	5.557	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	674	168	1301	676	664	730	1.4	2.2	12.370	B
2	1129	282	366	1131	1121	1611	2.5	3.1	8.959	A
3	1443	361	543	1456	1438	954	2.6	5.0	12.855	B
4	434	109	1598	433	431	400	0.5	0.8	6.008	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	835	209	1536	827	805	882	2.2	5.2	19.969	C
2	1391	348	442	1381	1366	1922	3.1	5.5	12.441	B
3	1765	441	655	1708	1686	1168	5.0	26.6	38.285	E
4	524	131	1890	528	528	473	0.8	0.8	6.910	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	828	207	1562	825	827	872	5.2	5.6	24.087	C
2	1364	341	459	1359	1365	1928	5.5	5.6	13.271	B
3	1779	445	643	1724	1715	1175	26.6	42.1	74.015	F
4	542	136	1894	540	527	474	0.8	1.0	6.936	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	655	164	1347	661	680	732	5.6	2.5	14.922	B
2	1143	286	370	1137	1149	1638	5.6	3.4	9.699	A
3	1469	367	538	1519	1586	969	42.1	8.8	44.848	E
4	436	109	1645	434	432	412	1.0	0.7	6.119	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	561	140	1087	558	569	600	2.5	1.6	9.451	A
2	942	236	311	943	943	1335	3.4	2.0	7.229	A
3	1214	304	447	1213	1243	807	8.8	2.8	9.085	A
4	366	91	1324	364	360	336	0.7	0.7	5.444	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	579	1001	0.579	578	556	0.0	1.3	8.471	A
			2	1, 4	0	1001	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	578			579	561	0.0	0.1	0.978	A
	Exit	1	1		613			613	601	0.0	0.0	0.000	A
2	Entry	1	1	3	522	1036	0.504	517	498	0.0	1.4	7.548	A
			2	1, 2, 4	458	1036	0.442	459	446	0.0	1.0	7.114	A
	Exit	1	1		1363			1363	1343	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	438	1256	0.349	436	427	0.0	0.7	4.827	A
			2	2, 3	787	1256	0.626	790	791	0.0	1.8	8.133	A
		2	1	(1, 2, 3, 4)	1225			1225	1228	0.0	0.1	0.358	A
	Exit	1	1		818			818	797	0.0	0.0	0.000	A
4	Entry	1	1	1	63	1000	0.063	63	62	0.0	0.0	4.343	A
			2	2, 3, 4	295	1000	0.295	296	295	0.0	0.5	5.812	A
	Exit	1	1		345			345	333	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	673	1000	0.673	676	664	1.3	1.8	10.020	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	674			673	666	0.1	0.4	2.339	A
	Exit	1	1		730			730	719	0.0	0.0	0.000	A
2	Entry	1	1	3	587	1015	0.578	588	585	1.4	1.7	9.272	A
			2	1, 2, 4	542	1015	0.534	543	536	1.0	1.4	8.618	A
	Exit	1	1		1611			1611	1591	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	514	1210	0.425	514	505	0.7	0.9	5.862	A
			2	2, 3	938	1210	0.775	942	933	1.8	3.2	12.147	B
		2	1	(1, 2, 3, 4)	1443			1452	1444	0.1	0.8	2.891	A
	Exit	1	1		954			954	949	0.0	0.0	0.000	A
4	Entry	1	1	1	73	1000	0.073	74	73	0.0	0.1	4.380	A
			2	2, 3, 4	361	1000	0.361	359	358	0.5	0.7	6.336	A
	Exit	1	1		400			400	394	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	826	1000	0.826	827	805	1.8	2.9	12.585	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	835			826	810	0.4	2.3	7.319	A
	Exit	1	1		882			882	871	0.0	0.0	0.000	A
2	Entry	1	1	3	726	1004	0.723	726	717	1.7	2.8	13.490	B
			2	1, 2, 4	665	1004	0.662	655	648	1.4	2.6	11.284	B
	Exit	1	1		1922			1922	1886	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	604	1149	0.525	607	600	0.9	1.4	8.242	A
			2	2, 3	1105	1149	0.962	1101	1086	3.2	6.6	19.003	C
		2	1	(1, 2, 3, 4)	1765			1708	1702	0.8	18.5	22.937	C
	Exit	1	1		1168			1168	1161	0.0	0.0	0.000	A
4	Entry	1	1	1	91	1000	0.091	92	90	0.1	0.1	4.431	A
			2	2, 3, 4	432	1000	0.432	435	439	0.7	0.7	7.410	A
	Exit	1	1		473			473	467	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	829	1000	0.829	825	827	2.9	3.3	13.264	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	828			829	829	2.3	2.3	10.833	B
	Exit	1	1		872			872	882	0.0	0.0	0.000	A
2	Entry	1	1	3	716	1003	0.714	716	725	2.8	3.0	14.389	B
			2	1, 2, 4	648	1003	0.646	643	660	2.6	2.5	12.042	B
	Exit	1	1		1928			1928	1926	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	611	1155	0.529	614	610	1.4	1.4	8.935	A
			2	2, 3	1114	1155	0.964	1110	1105	6.6	7.0	21.300	C
		2	1	(1, 2, 3, 4)	1779			1724	1716	18.5	33.8	57.094	F
	Exit	1	1		1175			1175	1172	0.0	0.0	0.000	A
4	Entry	1	1	1	87	1000	0.087	88	87	0.1	0.1	4.371	A
			2	2, 3, 4	455	1000	0.455	452	440	0.7	0.9	7.451	A
	Exit	1	1		474			474	475	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	659	1000	0.659	661	680	3.3	2.1	11.014	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	655			659	675	2.3	0.5	3.994	A
	Exit	1	1		732			732	744	0.0	0.0	0.000	A
2	Entry	1	1	3	602	1013	0.594	598	598	3.0	1.9	10.078	B
			2	1, 2, 4	541	1013	0.534	538	551	2.5	1.5	9.287	A
	Exit	1	1		1638			1638	1704	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	536	1212	0.442	538	557	1.4	1.0	6.995	A
			2	2, 3	980	1212	0.808	981	1029	7.0	4.0	17.129	C
		2	1	(1, 2, 3, 4)	1469			1516	1572	33.8	3.9	31.693	D
	Exit	1	1		969			969	967	0.0	0.0	0.000	A
4	Entry	1	1	1	69	1000	0.069	68	68	0.1	0.1	4.313	A
			2	2, 3, 4	367	1000	0.367	367	364	0.9	0.6	6.453	A
	Exit	1	1		412			412	431	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	562	1000	0.562	558	569	2.1	1.5	8.446	A
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	561			562	567	0.5	0.1	1.027	A
	Exit	1	1		600			600	610	0.0	0.0	0.000	A
2	Entry	1	1	3	498	1032	0.483	496	494	1.9	1.2	7.550	A
			2	1, 2, 4	444	1032	0.430	447	450	1.5	0.8	6.878	A
	Exit	1	1		1335			1335	1367	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	431	1263	0.341	431	440	1.0	0.5	5.059	A
			2	2, 3	783	1263	0.620	782	803	4.0	2.2	9.228	A
		2	1	(1, 2, 3, 4)	1214			1213	1233	3.9	0.2	1.463	A
	Exit	1	1		807			807	797	0.0	0.0	0.000	A
4	Entry	1	1	1	59	1000	0.059	59	61	0.1	0.1	4.117	A
			2	2, 3, 4	307	1000	0.307	305	298	0.6	0.6	5.716	A
	Exit	1	1		336			336	341	0.0	0.0	0.000	A

EML - DS2, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	24.40	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	864	100.000
2		ONE HOUR	✓	874	100.000
3		ONE HOUR	✓	1307	100.000
4		ONE HOUR	✓	941	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	846	16	2
	2	457	0	417	0
	3	152	606	0	549
	4	145	0	796	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	58.38	16.6	F	799	1199
2	8.00	2.3	A	799	1199
3	8.89	4.0	A	1198	1797
4	29.68	8.9	D	863	1295

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	656	164	1065	655	645	560	0.0	2.5	11.647	B
2	659	165	620	661	656	1100	0.0	1.0	5.965	A
3	981	245	348	980	981	934	0.0	1.4	4.978	A
4	713	178	911	714	708	417	0.0	2.0	9.031	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	787	197	1264	783	768	664	2.5	4.1	17.011	C
2	775	194	737	773	783	1310	1.0	1.5	6.682	A
3	1167	292	403	1164	1169	1107	1.4	2.0	5.901	A
4	849	212	1081	847	839	486	2.0	3.1	12.609	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	960	240	1538	928	910	830	4.1	13.3	38.664	E
2	971	243	879	970	964	1587	1.5	2.3	7.997	A
3	1453	363	507	1445	1428	1342	2.0	4.0	8.099	A
4	1037	259	1350	1019	1015	602	3.1	8.9	25.157	D

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	955	239	1547	949	941	832	13.3	16.6	58.375	F
2	954	238	895	956	957	1600	2.3	2.0	7.953	A
3	1447	362	505	1450	1440	1346	4.0	3.5	8.888	A
4	1027	257	1345	1034	1031	610	8.9	8.3	29.683	D

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	782	196	1256	797	827	678	16.6	5.1	35.160	E
2	789	197	734	787	786	1319	2.0	1.6	6.677	A
3	1165	291	418	1165	1180	1102	3.5	2.1	6.141	A
4	843	211	1090	845	872	493	8.3	3.0	16.395	C

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	655	164	1052	653	665	555	5.1	2.2	13.190	B
2	650	163	614	649	656	1090	1.6	1.2	5.998	A
3	976	244	338	976	978	925	2.1	1.5	5.002	A
4	712	178	899	708	713	416	3.0	2.1	9.842	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	654	1000	0.654	654	644	0.0	2.0	9.692	A
			2	1, 4	2	1000	0.002	2	1	0.0	0.0	3.572	A
		2	1	(1, 2, 3, 4)	656			656	653	0.0	0.5	1.940	A
	Exit	1	1		560			560	563	0.0	0.0	0.000	A
2	Entry	1	1	3	315	1000	0.315	315	315	0.0	0.5	5.789	A
			2	1, 2, 4	344	1000	0.344	346	341	0.0	0.5	6.127	A
	Exit	1	1		1100			1100	1087	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	521	1317	0.395	520	526	0.0	0.8	5.101	A
			2	2, 3	461	1317	0.350	460	456	0.0	0.6	4.776	A
		2	1	(1, 2, 3, 4)	981			981	987	0.0	0.0	0.026	A
	Exit	1	1		934			934	925	0.0	0.0	0.000	A
4	Entry	1	1	1	109	1000	0.109	109	110	0.0	0.2	4.461	A
			2	2, 3, 4	604	1000	0.604	605	598	0.0	1.8	9.869	A
	Exit	1	1		417			417	415	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	782	1000	0.782	781	766	2.0	2.6	11.701	B
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	4.147	A
		2	1	(1, 2, 3, 4)	787			783	770	0.5	1.5	5.313	A
	Exit	1	1		664			664	674	0.0	0.0	0.000	A
2	Entry	1	1	3	374	1000	0.374	372	371	0.5	0.7	6.565	A
			2	1, 2, 4	401	1000	0.401	401	412	0.5	0.8	6.787	A
	Exit	1	1		1310			1310	1297	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	622	1287	0.483	620	624	0.8	1.1	6.048	A
			2	2, 3	546	1287	0.424	544	545	0.6	0.9	5.493	A
		2	1	(1, 2, 3, 4)	1167			1168	1171	0.0	0.0	0.112	A
	Exit	1	1		1107			1107	1097	0.0	0.0	0.000	A
4	Entry	1	1	1	126	1000	0.126	127	127	0.2	0.1	4.531	A
			2	2, 3, 4	722	1000	0.722	720	712	1.8	3.0	14.046	B
	Exit	1	1		486			486	490	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	930	1000	0.930	926	908	2.6	4.4	15.225	C
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	4.493	A
		2	1	(1, 2, 3, 4)	960			932	917	1.5	9.0	23.344	C
	Exit	1	1		830			830	827	0.0	0.0	0.000	A
2	Entry	1	1	3	465	1000	0.465	465	463	0.7	0.9	7.757	A
			2	1, 2, 4	506	1000	0.506	505	501	0.8	1.3	8.217	A
	Exit	1	1		1587			1587	1555	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	769	1230	0.625	768	765	1.1	1.9	8.017	A
			2	2, 3	681	1230	0.554	677	663	0.9	1.5	7.013	A
		2	1	(1, 2, 3, 4)	1453			1450	1434	0.0	0.5	0.538	A
	Exit	1	1		1342			1342	1335	0.0	0.0	0.000	A
4	Entry	1	1	1	158	1000	0.158	158	159	0.1	0.2	4.842	A
			2	2, 3, 4	879	1000	0.879	861	856	3.0	8.7	28.846	D
	Exit	1	1		602			602	601	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	945	1000	0.945	947	939	4.4	4.2	16.173	C
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	3.540	A
		2	1	(1, 2, 3, 4)	955			947	941	9.0	12.3	42.217	E
	Exit	1	1		832			832	833	0.0	0.0	0.000	A
2	Entry	1	1	3	453	1000	0.453	453	454	0.9	1.0	7.469	A
			2	1, 2, 4	500	1000	0.500	503	503	1.3	1.0	8.391	A
	Exit	1	1		1600			1600	1584	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	776	1231	0.631	778	776	1.9	1.8	8.785	A
			2	2, 3	671	1231	0.545	672	664	1.5	1.3	7.253	A
		2	1	(1, 2, 3, 4)	1447			1447	1439	0.5	0.4	0.809	A
	Exit	1	1		1346			1346	1344	0.0	0.0	0.000	A
4	Entry	1	1	1	159	1000	0.159	159	160	0.2	0.2	4.762	A
			2	2, 3, 4	868	1000	0.868	875	872	8.7	8.1	34.265	D
	Exit	1	1		610			610	608	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	793	1000	0.793	794	825	4.2	2.8	13.622	B
			2	1, 4	2	1000	0.002	2	2	0.0	0.0	3.512	A
		2	1	(1, 2, 3, 4)	782			795	822	12.3	2.3	21.800	C
	Exit	1	1		678			678	679	0.0	0.0	0.000	A
2	Entry	1	1	3	373	1000	0.373	371	374	1.0	0.8	6.442	A
			2	1, 2, 4	416	1000	0.416	416	413	1.0	0.8	6.891	A
	Exit	1	1		1319			1319	1355	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	627	1279	0.490	625	635	1.8	1.2	6.386	A
			2	2, 3	538	1279	0.420	540	545	1.3	0.8	5.668	A
		2	1	(1, 2, 3, 4)	1165			1165	1176	0.4	0.0	0.099	A
	Exit	1	1		1102			1102	1131	0.0	0.0	0.000	A
4	Entry	1	1	1	129	1000	0.129	128	130	0.2	0.2	4.551	A
			2	2, 3, 4	714	1000	0.714	717	742	8.1	2.8	18.522	C
	Exit	1	1		493			493	500	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	654	1000	0.654	651	664	2.8	1.8	10.234	B
			2	1, 4	2	1000	0.002	2	1	0.0	0.0	3.897	A
		2	1	(1, 2, 3, 4)	655			655	661	2.3	0.4	3.079	A
	Exit	1	1		555			555	565	0.0	0.0	0.000	A
2	Entry	1	1	3	312	1000	0.312	313	313	0.8	0.6	5.783	A
			2	1, 2, 4	338	1000	0.338	337	343	0.8	0.6	6.194	A
	Exit	1	1		1090			1090	1106	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	526	1323	0.397	525	524	1.2	0.8	5.204	A
			2	2, 3	451	1323	0.341	451	454	0.8	0.7	4.705	A
		2	1	(1, 2, 3, 4)	976			977	976	0.0	0.0	0.030	A
	Exit	1	1		925			925	928	0.0	0.0	0.000	A
4	Entry	1	1	1	108	1000	0.108	108	109	0.2	0.1	4.558	A
			2	2, 3, 4	605	1000	0.605	601	604	2.8	1.9	10.802	B
	Exit	1	1		416			416	413	0.0	0.0	0.000	A

EML - DS2, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	43.38	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	744	100.000
2		ONE HOUR	✓	1254	100.000
3		ONE HOUR	✓	1616	100.000
4		ONE HOUR	✓	480	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	738	6	0
	2	601	0	653	0
	3	126	1044	0	446
	4	80	0	400	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	22.00	4.6	C	681	1021
2	13.43	5.3	B	1146	1719
3	87.29	48.2	F	1477	2216
4	6.82	1.2	A	439	658

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	557	139	1084	556	556	600	0.0	1.6	9.286	A
2	928	232	314	931	923	1327	0.0	2.1	7.380	A
3	1215	304	444	1221	1212	801	0.0	2.3	7.405	A
4	367	92	1321	364	363	345	0.0	0.7	5.541	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	668	167	1300	671	663	708	1.6	2.5	11.903	B
2	1113	278	358	1113	1120	1613	2.1	3.2	8.941	A
3	1456	364	524	1466	1446	946	2.3	5.5	12.799	B
4	423	106	1586	422	425	405	0.7	0.8	6.078	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	818	204	1516	820	816	883	2.5	4.6	20.336	C
2	1386	347	449	1391	1380	1887	3.2	5.3	13.426	B
3	1781	445	661	1670	1660	1179	5.5	31.8	42.522	E
4	537	134	1865	535	525	486	0.8	1.0	6.581	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	810	203	1530	821	819	880	4.6	4.5	22.004	C
2	1376	344	439	1381	1380	1912	5.3	5.1	12.927	B
3	1777	444	660	1707	1717	1159	31.8	48.2	87.286	F
4	521	130	1888	521	530	479	1.0	1.2	6.816	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	669	167	1347	669	676	728	4.5	2.4	13.275	B
2	1123	281	363	1123	1141	1654	5.1	2.8	9.369	A
3	1432	358	542	1534	1599	944	48.2	8.9	50.318	F
4	427	107	1648	427	428	428	1.2	0.8	5.991	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	563	141	1066	561	565	608	2.4	1.7	9.452	A
2	951	238	306	949	943	1321	2.8	2.0	7.220	A
3	1202	301	456	1199	1235	798	8.9	2.7	8.877	A
4	357	89	1317	358	360	338	0.8	0.5	5.411	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	558	1000	0.558	556	556	0.0	1.6	8.435	A
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	557			558	563	0.0	0.1	0.845	A
	Exit	1	1		600			600	597	0.0	0.0	0.000	A
2	Entry	1	1	3	486	1031	0.471	487	481	0.0	1.2	7.858	A
			2	1, 2, 4	442	1031	0.429	444	442	0.0	0.9	6.857	A
	Exit	1	1		1327			1327	1331	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	443	1265	0.350	445	433	0.0	0.4	4.758	A
			2	2, 3	775	1265	0.613	777	780	0.0	1.8	8.127	A
		2	1	(1, 2, 3, 4)	1215			1218	1221	0.0	0.1	0.469	A
	Exit	1	1		801			801	791	0.0	0.0	0.000	A
4	Entry	1	1	1	56	1000	0.056	57	58	0.0	0.0	4.341	A
			2	2, 3, 4	311	1000	0.311	308	304	0.0	0.7	5.768	A
	Exit	1	1		345			345	336	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	669	1000	0.669	671	663	1.6	2.0	9.878	A
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	668			669	665	0.1	0.5	2.008	A
	Exit	1	1		708			708	719	0.0	0.0	0.000	A
2	Entry	1	1	3	587	1016	0.577	589	584	1.2	1.6	9.368	A
			2	1, 2, 4	526	1016	0.518	524	536	0.9	1.5	8.477	A
	Exit	1	1		1613			1613	1585	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	517	1220	0.424	518	518	0.4	1.0	5.930	A
			2	2, 3	943	1220	0.772	949	928	1.8	3.3	12.047	B
		2	1	(1, 2, 3, 4)	1456			1460	1454	0.1	1.2	2.917	A
	Exit	1	1		946			946	945	0.0	0.0	0.000	A
4	Entry	1	1	1	71	1000	0.071	71	70	0.0	0.1	4.170	A
			2	2, 3, 4	351	1000	0.351	351	356	0.7	0.7	6.454	A
	Exit	1	1		405			405	406	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	819	1000	0.819	820	816	2.0	2.9	12.634	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	818			819	819	0.5	1.7	7.664	A
	Exit	1	1		883			883	883	0.0	0.0	0.000	A
2	Entry	1	1	3	726	1003	0.723	730	718	1.6	2.9	14.908	B
			2	1, 2, 4	660	1003	0.658	661	662	1.5	2.4	11.818	B
	Exit	1	1		1887			1887	1871	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	595	1145	0.519	596	598	1.0	1.5	8.020	A
			2	2, 3	1079	1145	0.942	1074	1062	3.3	6.6	19.486	C
		2	1	(1, 2, 3, 4)	1781			1674	1675	1.2	23.7	26.984	D
	Exit	1	1		1179			1179	1160	0.0	0.0	0.000	A
4	Entry	1	1	1	93	1000	0.093	93	89	0.1	0.0	4.165	A
			2	2, 3, 4	444	1000	0.444	442	435	0.7	1.0	7.076	A
	Exit	1	1		466			466	466	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	819	1000	0.819	821	819	2.9	2.9	13.012	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	810			819	819	1.7	1.7	9.012	A
	Exit	1	1		880			880	879	0.0	0.0	0.000	A
2	Entry	1	1	3	719	1005	0.715	721	724	2.9	2.6	13.823	B
			2	1, 2, 4	657	1005	0.654	660	656	2.4	2.5	11.941	B
	Exit	1	1		1912			1912	1920	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	613	1146	0.535	609	610	1.5	1.9	8.650	A
			2	2, 3	1096	1146	0.957	1098	1107	6.6	6.8	22.083	C
		2	1	(1, 2, 3, 4)	1777			1709	1719	23.7	39.5	69.911	F
	Exit	1	1		1159			1159	1170	0.0	0.0	0.000	A
4	Entry	1	1	1	89	1000	0.089	89	91	0.0	0.1	4.428	A
			2	2, 3, 4	433	1000	0.433	432	440	1.0	1.1	7.315	A
	Exit	1	1		479			479	477	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	668	1000	0.668	669	676	2.9	1.8	10.488	B
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	669			668	672	1.7	0.5	2.827	A
	Exit	1	1		728			728	744	0.0	0.0	0.000	A
2	Entry	1	1	3	581	1016	0.572	582	591	2.6	1.5	9.885	A
			2	1, 2, 4	542	1016	0.533	542	550	2.5	1.3	8.815	A
	Exit	1	1		1654			1654	1703	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	540	1211	0.446	543	567	1.9	1.0	7.651	A
			2	2, 3	978	1211	0.807	991	1033	6.8	3.7	17.049	C
		2	1	(1, 2, 3, 4)	1432			1517	1583	39.5	4.3	37.089	E
	Exit	1	1		944			944	952	0.0	0.0	0.000	A
4	Entry	1	1	1	71	1000	0.071	71	72	0.1	0.1	4.236	A
			2	2, 3, 4	357	1000	0.357	356	356	1.1	0.6	6.348	A
	Exit	1	1		428			428	445	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	561	1000	0.561	561	565	1.8	1.5	8.598	A
			2	1, 4	0	1000	0.000	0	0	0.0	0.0	0.000	A
		2	1	(1, 2, 3, 4)	563			561	563	0.5	0.3	0.890	A
	Exit	1	1		608			608	609	0.0	0.0	0.000	A
2	Entry	1	1	3	492	1034	0.475	492	490	1.5	1.0	7.564	A
			2	1, 2, 4	460	1034	0.445	456	452	1.3	0.9	6.848	A
	Exit	1	1		1321			1321	1355	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	434	1258	0.345	434	440	1.0	0.6	4.987	A
			2	2, 3	768	1258	0.611	765	795	3.7	1.9	8.661	A
		2	1	(1, 2, 3, 4)	1202			1203	1227	4.3	0.1	1.671	A
	Exit	1	1		798			798	797	0.0	0.0	0.000	A
4	Entry	1	1	1	56	1000	0.056	56	58	0.1	0.1	4.168	A
			2	2, 3, 4	301	1000	0.301	301	302	0.6	0.4	5.650	A
	Exit	1	1		338			338	341	0.0	0.0	0.000	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: J3.j9
Path: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Reports\Highways England Response\20-08-21 HE Note TN03\HE Review 301120\App 4 - Lane Sim
Report generation date: 02/12/2020 13:33:42

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	[Lane Simulation] - ELM - DM							
Arm 1	1.4	6.65		A	1.2	5.06		A
Arm 2	2.4	7.04		A	3.2	7.45		A
Arm 3	95.9	158.61		F	3.2	6.01		A
Arm 4	5.8	17.61		C	178.3	490.08		F
	[Lane Simulation] - EMM - DS1							
Arm 1	1.6	6.42		A	1.3	5.50		A
Arm 2	3.1	7.99		A	3.2	8.38		A
Arm 3	117.5	206.25		F	2.8	5.40		A
Arm 4	5.9	18.86		C	172.3	484.37		F
	[Lane Simulation] - EML - DS2							
Arm 1	1.2	6.51		A	1.3	5.60		A
Arm 2	3.3	8.02		A	3.2	8.60		A
Arm 3	119.2	212.86		F	2.5	5.49		A
Arm 4	5.9	17.94		C	183.5	513.92		F

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay.

File summary

File Description

Title	Junction 3, A3(M)
Location	
Site number	
Date	26/09/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	62100616
Enumerator	CORP\UKAJT009
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			1928773701	118	23.26

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓
D4	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓
D5	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓
D6	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓
D7	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓
D8	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

ELM - DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	69.82	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Hulbert Road east	
2	A3(M) south	
3	Hulbert Road west	
4	A3(M) north	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	4.10	7.50	24.9	40.0	145.0	9.0	
2	6.00	6.90	5.7	50.0	145.0	5.0	
3	7.60	7.60	0.0	45.0	145.0	4.0	
4	6.50	6.50	0.0	50.0	145.0	26.0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.762	2597
2	0.951	2551
3	1.208	3386
4	0.716	2207

The slope and intercept shown above include any corrections and adjustments.

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2, 3	✓	4.00		1000	99999	
			2	1, 3, 4	✓	4.00		1000	99999	
		2	1	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	3		Infinity		1000	99999	
			2	1, 2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	1, 4		Infinity		1000	99999	
			2	2, 3		Infinity		1000	99999	
	Exit	1	1			Infinity				
4	Entry	1	1	1		Infinity		1000	99999	
			2	2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.381	1298
			2	0.381	1298
2	Entry	1	1	0.476	1276
			2	0.476	1276
3	Entry	1	1	0.604	1693
			2	0.604	1693
4	Entry	1	1	0.358	1104
			2	0.358	1104

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm			
			1	2	3	4
1	1	1		✓	✓	
		2	✓		✓	✓
	2	1	✓	✓	✓	✓
2	1	1			✓	
		2	✓	✓	✓	✓
3	1	1	✓			✓
		2		✓	✓	
4	1	1	✓			
		2		✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	676	100.000
2		ONE HOUR	✓	1105	100.000
3		ONE HOUR	✓	1826	100.000
4		ONE HOUR	✓	985	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	257	404
	2	42	0	1063	0
	3	853	399	0	574
	4	733	0	252	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.65	1.4	A	619	928
2	7.04	2.4	A	1016	1524
3	158.61	95.9	F	1690	2534
4	17.61	5.8	C	903	1355

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	509	127	496	508	508	1253	0.0	0.8	4.772	A
2	836	209	692	834	833	312	0.0	1.3	5.131	A
3	1401	350	328	1405	1377	1197	0.0	3.4	9.162	A
4	752	188	997	751	736	736	0.0	1.6	7.925	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	603	151	588	605	613	1447	0.8	1.0	5.226	A
2	991	248	821	993	984	371	1.3	1.5	5.712	A
3	1641	410	395	1636	1621	1419	3.4	8.2	15.850	C
4	877	219	1153	882	877	878	1.6	2.6	10.760	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	748	187	733	755	746	1671	1.0	1.4	6.649	A
2	1230	307	1018	1228	1224	470	1.5	2.4	7.039	A
3	2027	507	497	1846	1819	1748	8.2	56.1	68.237	F
4	1079	270	1337	1067	1066	1007	2.6	5.8	15.244	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	737	184	709	742	743	1699	1.4	1.2	6.415	A
2	1206	302	1003	1205	1209	449	2.4	2.3	6.903	A
3	2006	501	490	1825	1835	1718	56.1	95.9	153.653	F
4	1084	271	1318	1089	1084	996	5.8	4.9	17.615	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	609	152	594	607	606	1543	1.2	1.1	5.387	A
2	992	248	821	991	997	381	2.3	1.9	5.969	A
3	1659	415	397	1804	1780	1415	95.9	61.6	158.607	F
4	878	219	1264	874	891	938	4.9	3.0	11.501	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	507	127	502	506	509	1295	1.1	0.7	4.801	A
2	841	210	689	838	835	320	1.9	1.3	5.127	A
3	1404	351	333	1507	1592	1193	61.6	8.7	57.398	F
4	750	188	1052	745	744	788	3.0	1.9	8.321	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	135	1110	0.122	135	130	0.0	0.2	3.824	A
			2	1, 3, 4	373	1110	0.336	374	378	0.0	0.6	4.979	A
		2	1	(1, 2, 3, 4)	509			508	511	0.0	0.1	0.086	A
	Exit	1	1		1253			1253	1225	0.0	0.0	0.000	A
2	Entry	1	1	3	409	1002	0.408	407	410	0.0	0.6	5.086	A
			2	1, 2, 3, 4	427	1002	0.426	426	423	0.0	0.7	5.174	A
	Exit	1	1		312			312	309	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1098	1495	0.735	1102	1078	0.0	3.1	10.712	B
			2	2, 3	303	1495	0.203	302	298	0.0	0.4	3.530	A
	Exit	1	1		1197			1197	1184	0.0	0.0	0.000	A
4	Entry	1	1	1	559	1000	0.559	557	548	0.0	1.3	8.909	A
			2	2, 3, 4	193	1000	0.193	194	188	0.0	0.2	5.038	A
	Exit	1	1		736			736	735	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	162	1074	0.151	162	161	0.2	0.2	4.081	A
			2	1, 3, 4	441	1074	0.410	442	452	0.6	0.7	5.366	A
		2	1	(1, 2, 3, 4)	603			602	613	0.1	0.1	0.197	A
	Exit	1	1		1447			1447	1437	0.0	0.0	0.000	A
2	Entry	1	1	3	485	1000	0.485	487	480	0.6	0.8	5.726	A
			2	1, 2, 3, 4	505	1000	0.505	506	504	0.7	0.7	5.697	A
	Exit	1	1		371			371	372	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1283	1454	0.882	1278	1262	3.1	7.8	19.279	C
			2	2, 3	357	1454	0.246	358	359	0.4	0.4	3.611	A
	Exit	1	1		1419			1419	1408	0.0	0.0	0.000	A
4	Entry	1	1	1	649	1000	0.649	652	651	1.3	2.3	12.782	B
			2	2, 3, 4	228	1000	0.228	230	227	0.2	0.3	4.964	A
	Exit	1	1		878			878	877	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	210	1028	0.204	209	208	0.2	0.3	4.411	A
			2	1, 3, 4	542	1028	0.527	545	539	0.7	1.0	6.549	A
		2	1	(1, 2, 3, 4)	748			752	748	0.1	0.2	0.691	A
	Exit	1	1		1671			1671	1657	0.0	0.0	0.000	A
2	Entry	1	1	3	605	1000	0.605	606	606	0.8	1.2	6.979	A
			2	1, 2, 3, 4	625	1000	0.625	622	617	0.7	1.2	7.097	A
	Exit	1	1		470			470	459	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1576	1392	1.132	1395	1377	7.8	55.6	86.276	F
			2	2, 3	451	1392	0.324	451	442	0.4	0.5	4.169	A
	Exit	1	1		1748			1748	1740	0.0	0.0	0.000	A
4	Entry	1	1	1	798	1000	0.798	786	788	2.3	5.2	18.617	C
			2	2, 3, 4	281	1000	0.281	281	277	0.3	0.6	5.577	A
	Exit	1	1		1007			1007	1000	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	207	1035	0.200	209	207	0.3	0.2	4.485	A
			2	1, 3, 4	531	1035	0.513	534	535	1.0	0.9	6.506	A
		2	1	(1, 2, 3, 4)	737			738	742	0.2	0.1	0.477	A
	Exit	1	1		1699			1699	1692	0.0	0.0	0.000	A
2	Entry	1	1	3	595	1000	0.595	596	597	1.2	1.1	6.863	A
			2	1, 2, 3, 4	611	1000	0.611	609	612	1.2	1.2	6.943	A
	Exit	1	1		449			449	452	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1570	1397	1.124	1391	1398	55.6	95.2	195.230	F
			2	2, 3	436	1397	0.312	433	436	0.5	0.7	4.293	A
	Exit	1	1		1718			1718	1723	0.0	0.0	0.000	A
4	Entry	1	1	1	809	1000	0.809	814	810	5.2	4.5	21.727	C
			2	2, 3, 4	275	1000	0.275	276	275	0.6	0.4	5.488	A
	Exit	1	1		996			996	1004	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	160	1072	0.150	162	160	0.2	0.2	4.101	A
			2	1, 3, 4	448	1072	0.418	446	446	0.9	0.9	5.570	A
		2	1	(1, 2, 3, 4)	609			609	606	0.1	0.0	0.205	A
	Exit	1	1		1543			1543	1552	0.0	0.0	0.000	A
2	Entry	1	1	3	492	1001	0.492	492	491	1.1	0.9	5.881	A
			2	1, 2, 3, 4	500	1001	0.500	499	506	1.2	0.9	6.055	A
	Exit	1	1		381			381	374	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1289	1453	0.888	1435	1420	95.2	61.2	201.767	F
			2	2, 3	369	1453	0.254	369	361	0.7	0.4	3.734	A
	Exit	1	1		1415			1415	1418	0.0	0.0	0.000	A
4	Entry	1	1	1	653	1000	0.653	649	662	4.5	2.7	13.717	B
			2	2, 3, 4	225	1000	0.225	226	228	0.4	0.3	5.148	A
	Exit	1	1		938			938	931	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	132	1107	0.119	131	132	0.2	0.2	3.727	A
			2	1, 3, 4	375	1107	0.339	375	377	0.9	0.5	5.054	A
		2	1	(1, 2, 3, 4)	507			507	508	0.0	0.0	0.095	A
	Exit	1	1		1295			1295	1357	0.0	0.0	0.000	A
2	Entry	1	1	3	409	1002	0.408	408	410	0.9	0.6	5.044	A
			2	1, 2, 3, 4	432	1002	0.431	430	424	0.9	0.7	5.207	A
	Exit	1	1		320			320	313	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1095	1491	0.734	1197	1289	61.2	8.5	72.869	F
			2	2, 3	309	1491	0.207	310	303	0.4	0.2	3.412	A
	Exit	1	1		1193			1193	1188	0.0	0.0	0.000	A
4	Entry	1	1	1	559	1000	0.559	553	554	2.7	1.6	9.520	A
			2	2, 3, 4	192	1000	0.192	192	189	0.3	0.3	4.872	A
	Exit	1	1		788			788	822	0.0	0.0	0.000	A

ELM - DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 4 - Lane Simulation	Arm 4: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	151.84	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	653	100.000
2		ONE HOUR	✓	1160	100.000
3		ONE HOUR	✓	1573	100.000
4		ONE HOUR	✓	1464	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	48	464	141
	2	19	0	1141	0
	3	52	703	0	818
	4	1150	0	314	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.06	1.2	A	600	901
2	7.45	3.2	A	1070	1605
3	6.01	3.2	A	1444	2165
4	490.08	178.3	F	1340	2010

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	504	126	777	502	503	892	0.0	0.9	4.488	A
2	895	224	708	896	888	571	0.0	1.2	5.262	A
3	1204	301	118	1206	1181	1486	0.0	1.1	4.056	A
4	1082	270	586	1083	1069	740	0.0	7.2	20.902	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	585	146	901	588	575	1021	0.9	0.7	4.685	A
2	1064	266	824	1070	1048	664	1.2	1.8	5.964	A
3	1374	344	151	1379	1408	1743	1.1	1.9	4.767	A
4	1295	324	686	1236	1233	844	7.2	27.7	55.963	F

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	709	177	1118	708	708	1062	0.7	1.2	5.006	A
2	1283	321	1005	1288	1277	822	1.8	2.7	7.291	A
3	1718	430	171	1725	1733	2121	1.9	2.6	6.010	A
4	1639	410	851	1329	1347	1044	27.7	98.6	179.658	F

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	718	180	1143	720	727	1083	1.2	0.8	5.056	A
2	1282	320	1019	1278	1286	844	2.7	3.2	7.453	A
3	1747	437	176	1745	1745	2121	2.6	3.2	5.959	A
4	1590	398	874	1352	1338	1046	98.6	164.7	380.413	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	588	147	917	584	584	1076	0.8	1.0	4.776	A
2	1009	252	826	1012	1032	676	3.2	1.9	6.006	A
3	1420	355	141	1420	1411	1697	3.2	1.9	4.609	A
4	1337	334	706	1288	1282	856	164.7	178.3	490.084	F

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	497	124	773	496	499	1037	1.0	0.8	4.558	A
2	887	222	692	888	868	577	1.9	1.2	5.059	A
3	1198	299	123	1199	1196	1457	1.9	1.1	3.990	A
4	1095	274	598	1212	1221	724	178.3	148.5	367.555	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	223	1016	0.220	222	225	0.0	0.3	4.248	A
			2	1, 3, 4	281	1016	0.277	280	277	0.0	0.6	4.672	A
		2	1	(1, 2, 3, 4)	504			504	506	0.0	0.0	0.007	A
	Exit	1	1		892			892	880	0.0	0.0	0.000	A
2	Entry	1	1	3	443	1003	0.442	444	436	0.0	0.5	5.232	A
			2	1, 2, 3, 4	452	1003	0.451	452	449	0.0	0.7	5.290	A
	Exit	1	1		571			571	565	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	668	1621	0.412	670	653	0.0	0.6	4.234	A
			2	2, 3	536	1621	0.331	537	529	0.0	0.5	3.836	A
	Exit	1	1		1486			1486	1470	0.0	0.0	0.000	A
4	Entry	1	1	1	842	1000	0.842	844	830	0.0	7.0	25.308	D
			2	2, 3, 4	240	1000	0.240	240	239	0.0	0.2	5.222	A
	Exit	1	1		740			740	724	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	265	1003	0.265	266	258	0.3	0.3	4.435	A
			2	1, 3, 4	320	1003	0.319	322	316	0.6	0.4	4.847	A
		2	1	(1, 2, 3, 4)	585			585	574	0.0	0.0	0.024	A
	Exit	1	1		1021			1021	1017	0.0	0.0	0.000	A
2	Entry	1	1	3	521	1000	0.521	524	517	0.5	0.8	5.937	A
			2	1, 2, 3, 4	543	1000	0.543	546	530	0.7	0.9	5.991	A
	Exit	1	1		664			664	667	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	757	1602	0.472	758	780	0.6	1.2	5.165	A
			2	2, 3	617	1602	0.385	622	628	0.5	0.7	4.270	A
	Exit	1	1		1743			1743	1722	0.0	0.0	0.000	A
4	Entry	1	1	1	1017	1000	1.017	956	949	7.0	27.2	69.862	F
			2	2, 3, 4	278	1000	0.278	279	284	0.2	0.5	5.484	A
	Exit	1	1		844			844	859	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	327	1000	0.327	328	322	0.3	0.4	4.672	A
			2	1, 3, 4	382	1000	0.382	381	387	0.4	0.8	5.201	A
		2	1	(1, 2, 3, 4)	709			709	710	0.0	0.0	0.043	A
	Exit	1	1		1062			1062	1086	0.0	0.0	0.000	A
2	Entry	1	1	3	640	1000	0.640	641	639	0.8	1.3	7.256	A
			2	1, 2, 3, 4	643	1000	0.643	647	638	0.9	1.3	7.326	A
	Exit	1	1		822			822	826	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	952	1590	0.599	953	961	1.2	1.8	6.685	A
			2	2, 3	766	1590	0.482	772	772	0.7	0.7	5.166	A
	Exit	1	1		2121			2121	2097	0.0	0.0	0.000	A
4	Entry	1	1	1	1291	1000	1.291	983	1004	27.2	97.9	226.078	F
			2	2, 3, 4	349	1000	0.349	347	343	0.5	0.7	6.156	A
	Exit	1	1		1044			1044	1058	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	326	1000	0.326	326	330	0.4	0.3	4.824	A
			2	1, 3, 4	392	1000	0.392	394	396	0.8	0.5	5.136	A
		2	1	(1, 2, 3, 4)	718			718	725	0.0	0.0	0.064	A
	Exit	1	1		1083			1083	1074	0.0	0.0	0.000	A
2	Entry	1	1	3	637	1000	0.637	634	644	1.3	1.7	7.352	A
			2	1, 2, 3, 4	645	1000	0.645	644	643	1.3	1.5	7.554	A
	Exit	1	1		844			844	830	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	955	1587	0.602	954	971	1.8	2.0	6.665	A
			2	2, 3	792	1587	0.499	790	774	0.7	1.2	5.072	A
	Exit	1	1		2121			2121	2124	0.0	0.0	0.000	A
4	Entry	1	1	1	1236	1000	1.236	999	995	97.9	163.9	483.055	F
			2	2, 3, 4	354	1000	0.354	354	343	0.7	0.7	6.239	A
	Exit	1	1		1046			1046	1067	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	269	1002	0.268	266	265	0.3	0.4	4.577	A
			2	1, 3, 4	319	1002	0.319	318	319	0.5	0.6	4.864	A
		2	1	(1, 2, 3, 4)	588			588	585	0.0	0.0	0.041	A
	Exit	1	1		1076			1076	1059	0.0	0.0	0.000	A
2	Entry	1	1	3	508	1000	0.508	508	514	1.7	1.0	5.938	A
			2	1, 2, 3, 4	501	1000	0.501	503	517	1.5	0.9	6.074	A
	Exit	1	1		676			676	676	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	785	1608	0.488	786	777	2.0	1.1	4.863	A
			2	2, 3	635	1608	0.395	634	634	1.2	0.8	4.296	A
	Exit	1	1		1697			1697	1712	0.0	0.0	0.000	A
4	Entry	1	1	1	1054	1000	1.054	1005	996	163.9	177.8	619.987	F
			2	2, 3, 4	284	1000	0.284	283	286	0.7	0.4	5.550	A
	Exit	1	1		856			856	860	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	218	1016	0.215	219	222	0.4	0.2	4.414	A
			2	1, 3, 4	280	1016	0.275	277	277	0.6	0.6	4.614	A
		2	1	(1, 2, 3, 4)	497			497	499	0.0	0.0	0.033	A
	Exit	1	1		1037			1037	1039	0.0	0.0	0.000	A
2	Entry	1	1	3	445	1004	0.444	445	434	1.0	0.5	4.935	A
			2	1, 2, 3, 4	442	1004	0.440	443	435	0.9	0.6	5.181	A
	Exit	1	1		577			577	571	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	659	1619	0.407	657	659	1.1	0.8	4.208	A
			2	2, 3	538	1619	0.332	542	537	0.8	0.4	3.723	A
	Exit	1	1		1457			1457	1446	0.0	0.0	0.000	A
4	Entry	1	1	1	863	1000	0.863	981	986	177.8	148.0	557.884	F
			2	2, 3, 4	232	1000	0.232	231	235	0.4	0.5	5.225	A
	Exit	1	1		724			724	729	0.0	0.0	0.000	A

EMM - DS1, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 3 - Lane Simulation	Arm 3: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	86.59	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	720	100.000
2		ONE HOUR	✓	1202	100.000
3		ONE HOUR	✓	1812	100.000
4		ONE HOUR	✓	964	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	290	415
	2	42	0	1160	0
	3	851	358	0	603
	4	741	0	223	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.42	1.6	A	662	993
2	7.99	3.1	A	1104	1656
3	206.25	117.5	F	1667	2501
4	18.86	5.9	C	881	1321

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	548	137	431	547	545	1232	0.0	0.9	4.579	A
2	904	226	698	905	905	280	0.0	1.3	5.330	A
3	1359	340	351	1368	1352	1252	0.0	3.4	9.157	A
4	714	179	945	719	718	773	0.0	1.3	8.013	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	643	161	528	645	644	1460	0.9	1.0	5.372	A
2	1076	269	830	1074	1082	343	1.3	2.0	6.187	A
3	1642	411	404	1636	1606	1499	3.4	10.7	20.046	C
4	862	215	1123	865	856	918	1.3	2.4	10.429	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	796	199	635	795	791	1666	1.0	1.6	6.361	A
2	1330	332	1018	1332	1320	412	2.0	3.0	7.864	A
3	2007	502	503	1779	1776	1847	10.7	64.5	78.603	F
4	1051	263	1252	1048	1044	1030	2.4	5.7	16.927	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	796	199	637	801	792	1666	1.6	1.3	6.424	A
2	1320	330	1025	1322	1320	413	3.0	3.1	7.994	A
3	2007	502	507	1786	1780	1841	64.5	117.5	189.817	F
4	1054	263	1251	1053	1054	1042	5.7	5.9	18.863	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	644	161	526	643	650	1551	1.3	1.0	5.430	A
2	1083	271	830	1081	1086	340	3.1	1.9	6.176	A
3	1632	408	406	1765	1752	1505	117.5	85.0	206.255	F
4	869	217	1211	867	879	960	5.9	3.2	12.423	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	545	136	442	545	543	1330	1.0	0.7	4.753	A
2	911	228	707	913	903	279	1.9	1.3	5.383	A
3	1355	339	354	1527	1619	1267	85.0	20.4	93.178	F
4	735	184	1036	736	734	844	3.2	1.6	8.316	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	148	1134	0.131	149	151	0.0	0.1	3.731	A
			2	1, 3, 4	400	1134	0.353	398	394	0.0	0.7	4.775	A
		2	1	(1, 2, 3, 4)	548			548	548	0.0	0.0	0.090	A
	Exit	1	1		1232			1232	1221	0.0	0.0	0.000	A
2	Entry	1	1	3	443	1002	0.442	443	442	0.0	0.6	5.332	A
			2	1, 2, 3, 4	461	1002	0.461	461	463	0.0	0.7	5.327	A
	Exit	1	1		280			280	278	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1092	1481	0.737	1100	1086	0.0	3.2	10.579	B
			2	2, 3	267	1481	0.180	268	266	0.0	0.3	3.305	A
	Exit	1	1		1252			1252	1262	0.0	0.0	0.000	A
4	Entry	1	1	1	550	1000	0.550	556	552	0.0	1.0	8.943	A
			2	2, 3, 4	164	1000	0.164	164	166	0.0	0.3	4.900	A
	Exit	1	1		773			773	760	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	177	1097	0.162	178	178	0.1	0.2	3.981	A
			2	1, 3, 4	466	1097	0.424	467	466	0.7	0.7	5.536	A
		2	1	(1, 2, 3, 4)	643			643	644	0.0	0.1	0.266	A
	Exit	1	1		1460			1460	1444	0.0	0.0	0.000	A
2	Entry	1	1	3	534	1000	0.534	532	532	0.6	0.9	6.154	A
			2	1, 2, 3, 4	543	1000	0.543	542	549	0.7	1.0	6.219	A
	Exit	1	1		343			343	338	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1314	1449	0.907	1308	1283	3.2	10.4	24.126	C
			2	2, 3	328	1449	0.227	328	323	0.3	0.3	3.507	A
	Exit	1	1		1499			1499	1502	0.0	0.0	0.000	A
4	Entry	1	1	1	662	1000	0.662	665	659	1.0	2.1	12.059	B
			2	2, 3, 4	200	1000	0.200	199	197	0.3	0.3	4.927	A
	Exit	1	1		918			918	904	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	232	1057	0.220	233	230	0.2	0.3	4.325	A
			2	1, 3, 4	564	1057	0.533	562	560	0.7	1.1	6.354	A
		2	1	(1, 2, 3, 4)	796			796	793	0.1	0.2	0.594	A
	Exit	1	1		1666			1666	1654	0.0	0.0	0.000	A
2	Entry	1	1	3	658	1000	0.658	659	652	0.9	1.5	7.827	A
			2	1, 2, 3, 4	671	1000	0.671	673	668	1.0	1.5	7.901	A
	Exit	1	1		412			412	411	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1611	1389	1.160	1385	1381	10.4	64.0	97.039	F
			2	2, 3	396	1389	0.285	394	395	0.3	0.5	4.051	A
	Exit	1	1		1847			1847	1837	0.0	0.0	0.000	A
4	Entry	1	1	1	809	1000	0.809	807	801	2.1	5.4	20.431	C
			2	2, 3, 4	242	1000	0.242	241	243	0.3	0.4	5.246	A
	Exit	1	1		1030			1030	1028	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	232	1056	0.220	233	230	0.3	0.3	4.434	A
			2	1, 3, 4	565	1056	0.534	568	562	1.1	1.0	6.515	A
		2	1	(1, 2, 3, 4)	798			797	791	0.2	0.0	0.517	A
	Exit	1	1		1666			1666	1668	0.0	0.0	0.000	A
2	Entry	1	1	3	659	1000	0.659	661	655	1.5	1.5	7.866	A
			2	1, 2, 3, 4	661	1000	0.661	662	664	1.5	1.5	8.121	A
	Exit	1	1		413			413	411	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1612	1387	1.162	1390	1385	64.0	117.0	235.610	F
			2	2, 3	395	1387	0.285	398	395	0.5	0.5	4.067	A
	Exit	1	1		1841			1841	1835	0.0	0.0	0.000	A
4	Entry	1	1	1	813	1000	0.813	811	811	5.4	5.6	22.918	C
			2	2, 3, 4	240	1000	0.240	242	242	0.4	0.3	5.321	A
	Exit	1	1		1042			1042	1032	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	181	1098	0.164	181	182	0.3	0.2	3.962	A
			2	1, 3, 4	464	1098	0.423	463	468	1.0	0.8	5.596	A
		2	1	(1, 2, 3, 4)	644			645	649	0.0	0.0	0.294	A
	Exit	1	1		1551			1551	1552	0.0	0.0	0.000	A
2	Entry	1	1	3	540	1000	0.539	538	537	1.5	1.0	6.080	A
			2	1, 2, 3, 4	544	1000	0.544	543	549	1.5	1.0	6.270	A
	Exit	1	1		340			340	340	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1306	1448	0.902	1438	1425	117.0	84.7	256.968	F
			2	2, 3	326	1448	0.225	327	327	0.5	0.3	3.616	A
	Exit	1	1		1505			1505	1513	0.0	0.0	0.000	A
4	Entry	1	1	1	668	1000	0.668	667	680	5.6	2.8	14.657	B
			2	2, 3, 4	201	1000	0.201	199	199	0.3	0.4	4.919	A
	Exit	1	1		960			960	962	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	143	1130	0.126	142	144	0.2	0.1	3.734	A
			2	1, 3, 4	402	1130	0.356	402	398	0.8	0.5	4.977	A
		2	1	(1, 2, 3, 4)	545			545	541	0.0	0.0	0.107	A
	Exit	1	1		1330			1330	1381	0.0	0.0	0.000	A
2	Entry	1	1	3	445	1003	0.443	445	442	1.0	0.6	5.345	A
			2	1, 2, 3, 4	466	1003	0.465	468	461	1.0	0.7	5.419	A
	Exit	1	1		279			279	278	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1087	1479	0.735	1259	1352	84.7	20.1	115.934	F
			2	2, 3	268	1479	0.181	268	267	0.3	0.2	3.273	A
	Exit	1	1		1267			1267	1254	0.0	0.0	0.000	A
4	Entry	1	1	1	563	1000	0.563	562	563	2.8	1.4	9.425	A
			2	2, 3, 4	172	1000	0.172	173	170	0.4	0.2	4.675	A
	Exit	1	1		844			844	884	0.0	0.0	0.000	A

EMM - DS1, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 4 - Lane Simulation	Arm 4: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	150.42	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	716	100.000
2		ONE HOUR	✓	1245	100.000
3		ONE HOUR	✓	1400	100.000
4		ONE HOUR	✓	1447	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	48	457	211
	2	19	0	1226	0
	3	56	703	0	641
	4	1155	0	292	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.50	1.3	A	649	973
2	8.38	3.2	A	1143	1715
3	5.40	2.8	A	1288	1932
4	484.37	172.3	F	1327	1991

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	530	132	735	529	539	921	0.0	0.8	4.600	A
2	947	237	711	941	940	552	0.0	1.9	5.394	A
3	1052	263	165	1055	1050	1487	0.0	1.1	3.811	A
4	1073	268	575	1081	1062	645	0.0	7.2	21.266	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	623	156	917	624	636	1046	0.8	0.9	5.082	A
2	1142	286	847	1145	1125	695	1.9	2.2	6.340	A
3	1269	317	203	1269	1259	1789	1.1	1.7	4.296	A
4	1286	322	722	1240	1222	750	7.2	26.9	58.526	F

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	791	198	1095	796	788	1068	0.9	1.2	5.498	A
2	1367	342	1062	1372	1371	829	2.2	2.5	8.378	A
3	1523	381	258	1527	1541	2177	1.7	1.9	5.396	A
4	1608	402	852	1312	1325	932	26.9	95.1	176.544	F

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	782	196	1109	782	778	1081	1.2	1.3	5.486	A
2	1359	340	1066	1362	1363	825	2.5	3.2	8.127	A
3	1566	391	245	1556	1558	2184	1.9	2.8	5.402	A
4	1586	396	852	1339	1324	950	95.1	162.9	375.288	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	627	157	896	624	633	1069	1.3	1.1	4.981	A
2	1120	280	849	1124	1126	670	3.2	2.1	6.291	A
3	1255	314	192	1254	1262	1782	2.8	1.5	4.376	A
4	1291	323	698	1266	1266	747	162.9	172.3	484.371	F

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	539	135	755	540	542	1082	1.1	0.7	4.691	A
2	924	231	726	932	930	569	2.1	1.2	5.514	A
3	1063	266	176	1062	1057	1481	1.5	1.1	3.750	A
4	1117	279	591	1246	1239	648	172.3	137.0	351.245	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	223	1028	0.217	222	226	0.0	0.3	4.373	A
			2	1, 3, 4	306	1028	0.298	306	313	0.0	0.4	4.677	A
		2	1	(1, 2, 3, 4)	530			529	542	0.0	0.0	0.050	A
	Exit	1	1		921			921	896	0.0	0.0	0.000	A
2	Entry	1	1	3	467	1002	0.466	465	468	0.0	0.9	5.473	A
			2	1, 2, 3, 4	480	1002	0.479	477	472	0.0	0.9	5.316	A
	Exit	1	1		552			552	564	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	534	1593	0.335	536	523	0.0	0.6	3.807	A
			2	2, 3	518	1593	0.325	519	526	0.0	0.5	3.815	A
	Exit	1	1		1487			1487	1492	0.0	0.0	0.000	A
4	Entry	1	1	1	856	1000	0.856	866	843	0.0	6.8	25.337	D
			2	2, 3, 4	217	1000	0.217	216	220	0.0	0.4	5.179	A
	Exit	1	1		645			645	639	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	255	1004	0.254	256	267	0.3	0.3	4.630	A
			2	1, 3, 4	368	1004	0.367	368	368	0.4	0.6	5.299	A
		2	1	(1, 2, 3, 4)	623			623	636	0.0	0.0	0.063	A
	Exit	1	1		1046			1046	1023	0.0	0.0	0.000	A
2	Entry	1	1	3	562	1000	0.562	563	560	0.9	1.1	6.285	A
			2	1, 2, 3, 4	581	1000	0.581	582	565	0.9	1.1	6.396	A
	Exit	1	1		695			695	679	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	611	1570	0.389	612	622	0.6	0.8	4.221	A
			2	2, 3	658	1570	0.419	658	637	0.5	0.9	4.369	A
	Exit	1	1		1789			1789	1774	0.0	0.0	0.000	A
4	Entry	1	1	1	1024	1000	1.024	981	957	6.8	26.3	72.120	F
			2	2, 3, 4	262	1000	0.262	259	264	0.4	0.6	5.457	A
	Exit	1	1		750			750	766	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	341	1000	0.341	343	339	0.3	0.5	4.737	A
			2	1, 3, 4	450	1000	0.450	453	449	0.6	0.7	5.791	A
		2	1	(1, 2, 3, 4)	791			792	789	0.0	0.0	0.161	A
	Exit	1	1		1068			1068	1078	0.0	0.0	0.000	A
2	Entry	1	1	3	674	1000	0.674	678	682	1.1	1.1	8.385	A
			2	1, 2, 3, 4	693	1000	0.693	695	688	1.1	1.3	8.372	A
	Exit	1	1		829			829	830	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	750	1537	0.488	752	764	0.8	1.0	5.419	A
			2	2, 3	773	1537	0.503	775	776	0.9	0.9	5.373	A
	Exit	1	1		2177			2177	2178	0.0	0.0	0.000	A
4	Entry	1	1	1	1288	1000	1.288	991	999	26.3	94.5	220.211	F
			2	2, 3, 4	320	1000	0.320	321	326	0.6	0.5	6.074	A
	Exit	1	1		932			932	938	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	334	1000	0.334	333	330	0.5	0.5	4.992	A
			2	1, 3, 4	450	1000	0.450	449	448	0.7	0.8	5.650	A
		2	1	(1, 2, 3, 4)	782			784	779	0.0	0.0	0.116	A
	Exit	1	1		1081			1081	1078	0.0	0.0	0.000	A
2	Entry	1	1	3	683	1000	0.683	685	688	1.1	1.6	7.919	A
			2	1, 2, 3, 4	676	1000	0.676	677	675	1.3	1.7	8.339	A
	Exit	1	1		825			825	834	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	790	1545	0.511	781	776	1.0	1.7	5.609	A
			2	2, 3	776	1545	0.502	775	782	0.9	1.1	5.196	A
	Exit	1	1		2184			2184	2161	0.0	0.0	0.000	A
4	Entry	1	1	1	1254	1000	1.254	1005	999	94.5	162.4	470.115	F
			2	2, 3, 4	332	1000	0.332	334	326	0.5	0.5	5.728	A
	Exit	1	1		950			950	950	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	267	1003	0.266	265	268	0.5	0.5	4.636	A
			2	1, 3, 4	360	1003	0.359	358	366	0.8	0.6	5.178	A
		2	1	(1, 2, 3, 4)	627			627	632	0.0	0.0	0.030	A
	Exit	1	1		1069			1069	1075	0.0	0.0	0.000	A
2	Entry	1	1	3	556	1000	0.556	561	559	1.6	1.0	6.305	A
			2	1, 2, 3, 4	564	1000	0.564	564	566	1.7	1.1	6.277	A
	Exit	1	1		670			670	668	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	626	1577	0.397	624	634	1.7	0.8	4.357	A
			2	2, 3	630	1577	0.399	629	628	1.1	0.7	4.396	A
	Exit	1	1		1782			1782	1779	0.0	0.0	0.000	A
4	Entry	1	1	1	1023	1000	1.023	1000	1005	162.4	171.9	603.934	F
			2	2, 3, 4	268	1000	0.268	267	261	0.5	0.4	5.474	A
	Exit	1	1		747			747	765	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	225	1022	0.220	224	228	0.5	0.3	4.370	A
			2	1, 3, 4	315	1022	0.308	316	314	0.6	0.4	4.859	A
		2	1	(1, 2, 3, 4)	539			540	541	0.0	0.0	0.039	A
	Exit	1	1		1082			1082	1081	0.0	0.0	0.000	A
2	Entry	1	1	3	451	1001	0.451	456	462	1.0	0.5	5.492	A
			2	1, 2, 3, 4	473	1001	0.473	476	469	1.1	0.7	5.535	A
	Exit	1	1		569			569	560	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	535	1586	0.337	532	534	0.8	0.6	3.728	A
			2	2, 3	528	1586	0.333	530	523	0.7	0.5	3.773	A
	Exit	1	1		1481			1481	1481	0.0	0.0	0.000	A
4	Entry	1	1	1	888	1000	0.888	1022	1021	171.9	136.5	496.256	F
			2	2, 3, 4	228	1000	0.228	226	218	0.4	0.5	5.385	A
	Exit	1	1		648			648	647	0.0	0.0	0.000	A

EML - DS2, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 3 - Lane Simulation	Arm 3: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	89.31	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	720	100.000
2		ONE HOUR	✓	1196	100.000
3		ONE HOUR	✓	1813	100.000
4		ONE HOUR	✓	964	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	289	416
	2	42	0	1154	0
	3	849	360	0	604
	4	740	0	224	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.51	1.2	A	656	984
2	8.02	3.3	A	1095	1643
3	212.86	119.2	F	1669	2503
4	17.94	5.9	C	880	1320

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	540	135	439	539	542	1227	0.0	0.7	4.646	A
2	912	228	696	911	903	281	0.0	1.5	5.450	A
3	1368	342	344	1369	1358	1264	0.0	3.3	9.083	A
4	719	180	950	716	719	762	0.0	1.8	7.985	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	642	161	537	638	649	1472	0.7	1.2	5.328	A
2	1062	266	829	1065	1067	346	1.5	1.8	5.958	A
3	1642	411	404	1664	1620	1491	3.3	9.7	19.620	C
4	854	214	1147	862	850	922	1.8	2.7	11.215	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	795	199	636	797	795	1674	1.2	1.2	6.506	A
2	1323	331	1026	1323	1322	407	1.8	2.9	8.023	A
3	1998	499	506	1774	1771	1843	9.7	65.7	80.460	F
4	1058	265	1249	1061	1054	1030	2.7	5.9	17.936	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	785	196	645	789	793	1690	1.2	1.2	6.358	A
2	1306	326	1017	1299	1310	418	2.9	3.3	7.737	A
3	2014	503	503	1796	1795	1813	65.7	119.2	193.057	F
4	1062	266	1269	1066	1060	1030	5.9	4.7	16.659	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	643	161	531	644	648	1525	1.2	1.0	5.423	A
2	1071	268	834	1066	1088	341	3.3	2.3	6.205	A
3	1636	409	405	1766	1753	1494	119.2	87.5	212.858	F
4	856	214	1202	855	873	970	4.7	2.5	10.528	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	531	133	437	530	542	1347	1.0	0.8	4.724	A
2	898	225	687	900	903	279	2.3	1.3	5.290	A
3	1356	339	348	1568	1629	1241	87.5	20.6	98.007	F
4	731	183	1058	725	734	857	2.5	1.8	8.112	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	145	1131	0.128	145	146	0.0	0.2	3.675	A
			2	1, 3, 4	395	1131	0.349	394	398	0.0	0.6	4.855	A
		2	1	(1, 2, 3, 4)	540			540	545	0.0	0.0	0.107	A
	Exit	1	1		1227			1227	1221	0.0	0.0	0.000	A
2	Entry	1	1	3	452	1002	0.451	449	445	0.0	0.8	5.372	A
			2	1, 2, 3, 4	460	1002	0.459	462	457	0.0	0.6	5.526	A
	Exit	1	1		281			281	280	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1096	1485	0.738	1097	1089	0.0	3.1	10.499	B
			2	2, 3	271	1485	0.183	271	270	0.0	0.2	3.364	A
	Exit	1	1		1264			1264	1257	0.0	0.0	0.000	A
4	Entry	1	1	1	550	1000	0.550	549	551	0.0	1.5	8.992	A
			2	2, 3, 4	169	1000	0.169	168	168	0.0	0.3	4.681	A
	Exit	1	1		762			762	764	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	177	1094	0.162	176	182	0.2	0.2	3.979	A
			2	1, 3, 4	463	1094	0.423	462	467	0.6	0.8	5.460	A
		2	1	(1, 2, 3, 4)	642			640	650	0.0	0.2	0.271	A
	Exit	1	1		1472			1472	1447	0.0	0.0	0.000	A
2	Entry	1	1	3	526	1000	0.526	528	527	0.8	0.8	5.914	A
			2	1, 2, 3, 4	536	1000	0.536	537	540	0.6	0.9	6.001	A
	Exit	1	1		346			346	338	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1313	1449	0.906	1332	1296	3.1	9.4	23.568	C
			2	2, 3	329	1449	0.227	332	324	0.2	0.3	3.545	A
	Exit	1	1		1491			1491	1491	0.0	0.0	0.000	A
4	Entry	1	1	1	652	1000	0.652	658	650	1.5	2.4	13.037	B
			2	2, 3, 4	203	1000	0.203	205	200	0.3	0.2	5.285	A
	Exit	1	1		922			922	911	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	234	1058	0.221	234	231	0.2	0.2	4.347	A
			2	1, 3, 4	561	1058	0.530	563	564	0.8	0.9	6.526	A
		2	1	(1, 2, 3, 4)	795			795	796	0.2	0.1	0.623	A
	Exit	1	1		1674			1674	1666	0.0	0.0	0.000	A
2	Entry	1	1	3	660	1000	0.660	662	656	0.8	1.4	7.921	A
			2	1, 2, 3, 4	663	1000	0.663	661	666	0.9	1.6	8.124	A
	Exit	1	1		407			407	409	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1605	1387	1.157	1382	1378	9.4	65.3	99.197	F
			2	2, 3	393	1387	0.283	392	393	0.3	0.4	4.196	A
	Exit	1	1		1843			1843	1844	0.0	0.0	0.000	A
4	Entry	1	1	1	817	1000	0.817	818	807	2.4	5.7	21.688	C
			2	2, 3, 4	241	1000	0.241	244	247	0.2	0.3	5.497	A
	Exit	1	1		1030			1030	1025	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	230	1054	0.218	232	228	0.2	0.2	4.396	A
			2	1, 3, 4	556	1054	0.528	557	564	0.9	0.9	6.341	A
		2	1	(1, 2, 3, 4)	785			786	793	0.1	0.1	0.573	A
	Exit	1	1		1690			1690	1682	0.0	0.0	0.000	A
2	Entry	1	1	3	645	1000	0.645	642	650	1.4	1.5	7.623	A
			2	1, 2, 3, 4	661	1000	0.661	657	660	1.8	1.8	7.848	A
	Exit	1	1		418			418	414	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1615	1389	1.162	1396	1398	65.3	118.7	239.495	F
			2	2, 3	399	1389	0.288	400	397	0.4	0.5	4.098	A
	Exit	1	1		1813			1813	1822	0.0	0.0	0.000	A
4	Entry	1	1	1	818	1000	0.818	821	816	5.7	4.4	20.086	C
			2	2, 3, 4	244	1000	0.244	245	245	0.3	0.3	5.340	A
	Exit	1	1		1030			1030	1041	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	179	1096	0.164	181	182	0.2	0.2	4.119	A
			2	1, 3, 4	464	1096	0.423	463	466	0.9	0.8	5.633	A
		2	1	(1, 2, 3, 4)	643			643	647	0.1	0.0	0.220	A
	Exit	1	1		1525			1525	1538	0.0	0.0	0.000	A
2	Entry	1	1	3	525	1000	0.525	524	532	1.5	1.0	6.188	A
			2	1, 2, 3, 4	547	1000	0.547	543	556	1.8	1.2	6.221	A
	Exit	1	1		341			341	338	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1307	1448	0.902	1437	1427	118.7	87.1	265.157	F
			2	2, 3	329	1448	0.227	328	325	0.5	0.3	3.588	A
	Exit	1	1		1494			1494	1515	0.0	0.0	0.000	A
4	Entry	1	1	1	652	1000	0.652	652	672	4.4	2.1	12.201	B
			2	2, 3, 4	204	1000	0.204	202	201	0.3	0.4	5.084	A
	Exit	1	1		970			970	971	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	140	1132	0.123	140	145	0.2	0.2	3.748	A
			2	1, 3, 4	391	1132	0.345	390	397	0.8	0.6	4.946	A
		2	1	(1, 2, 3, 4)	531			531	541	0.0	0.0	0.100	A
	Exit	1	1		1347			1347	1389	0.0	0.0	0.000	A
2	Entry	1	1	3	436	1002	0.435	438	445	1.0	0.6	5.174	A
			2	1, 2, 3, 4	462	1002	0.461	463	458	1.2	0.7	5.402	A
	Exit	1	1		279			279	283	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1090	1483	0.735	1300	1358	87.1	20.4	122.456	F
			2	2, 3	267	1483	0.180	268	271	0.3	0.3	3.358	A
	Exit	1	1		1241			1241	1258	0.0	0.0	0.000	A
4	Entry	1	1	1	563	1000	0.563	557	560	2.1	1.6	9.121	A
			2	2, 3, 4	168	1000	0.168	169	174	0.4	0.2	4.898	A
	Exit	1	1		857			857	878	0.0	0.0	0.000	A

EML - DS2, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 4 - Lane Simulation	Arm 4: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	159.26	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	709	100.000
2		ONE HOUR	✓	1252	100.000
3		ONE HOUR	✓	1404	100.000
4		ONE HOUR	✓	1449	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	48	450	211
	2	19	0	1233	0
	3	58	703	0	643
	4	1159	0	290	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.60	1.3	A	651	977
2	8.60	3.2	A	1151	1726
3	5.49	2.5	A	1281	1922
4	513.92	183.5	F	1327	1990

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	547	137	741	542	536	938	0.0	1.0	4.725	A
2	950	237	725	947	939	558	0.0	1.6	5.463	A
3	1042	261	169	1043	1055	1502	0.0	1.1	3.857	A
4	1109	277	582	1096	1064	631	0.0	8.1	21.341	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	646	161	888	644	644	1036	1.0	1.1	5.054	A
2	1141	285	855	1145	1133	678	1.6	2.0	6.540	A
3	1255	314	211	1255	1257	1789	1.1	1.5	4.330	A
4	1293	323	698	1226	1218	767	8.1	28.6	59.110	F

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	791	198	1072	792	778	1087	1.1	1.3	5.597	A
2	1380	345	1050	1386	1373	815	2.0	3.2	8.460	A
3	1526	381	260	1528	1532	2175	1.5	2.1	5.175	A
4	1595	399	846	1313	1310	942	28.6	98.5	186.315	F

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	767	192	1082	772	786	1074	1.3	1.0	5.516	A
2	1387	347	1027	1392	1388	828	3.2	3.2	8.601	A
3	1551	388	250	1549	1555	2168	2.1	2.5	5.493	A
4	1577	394	854	1302	1312	945	98.5	169.2	393.847	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	612	153	900	615	634	1065	1.0	0.9	4.992	A
2	1124	281	834	1123	1116	682	3.2	2.2	6.281	A
3	1267	317	206	1266	1270	1752	2.5	1.6	4.426	A
4	1305	326	708	1258	1247	764	169.2	183.5	513.917	F

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	546	136	729	543	541	1063	0.9	0.9	4.577	A
2	923	231	718	925	940	554	2.2	1.5	5.548	A
3	1047	262	177	1048	1053	1466	1.6	1.1	3.858	A
4	1082	270	576	1216	1224	650	183.5	148.9	376.356	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	232	1027	0.226	230	223	0.0	0.4	4.474	A
			2	1, 3, 4	315	1027	0.307	312	313	0.0	0.6	4.870	A
		2	1	(1, 2, 3, 4)	547			547	540	0.0	0.0	0.020	A
	Exit	1	1		938			938	903	0.0	0.0	0.000	A
2	Entry	1	1	3	474	1002	0.474	472	468	0.0	0.8	5.414	A
			2	1, 2, 3, 4	475	1002	0.474	475	471	0.0	0.7	5.512	A
	Exit	1	1		558			558	567	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	516	1591	0.325	518	522	0.0	0.4	3.830	A
			2	2, 3	526	1591	0.331	525	532	0.0	0.6	3.884	A
	Exit	1	1		1502			1502	1488	0.0	0.0	0.000	A
4	Entry	1	1	1	892	1000	0.892	881	846	0.0	7.7	25.411	D
			2	2, 3, 4	217	1000	0.217	216	218	0.0	0.4	5.064	A
	Exit	1	1		631			631	635	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	271	1004	0.270	271	272	0.4	0.4	4.591	A
			2	1, 3, 4	374	1004	0.372	373	372	0.6	0.6	5.232	A
		2	1	(1, 2, 3, 4)	646			646	644	0.0	0.0	0.090	A
	Exit	1	1		1036			1036	1027	0.0	0.0	0.000	A
2	Entry	1	1	3	569	1000	0.569	571	565	0.8	0.9	6.512	A
			2	1, 2, 3, 4	573	1000	0.573	574	568	0.7	1.1	6.569	A
	Exit	1	1		678			678	674	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	620	1566	0.396	622	627	0.4	0.7	4.357	A
			2	2, 3	635	1566	0.406	633	630	0.6	0.9	4.304	A
	Exit	1	1		1789			1789	1784	0.0	0.0	0.000	A
4	Entry	1	1	1	1037	1000	1.037	970	958	7.7	28.2	72.472	F
			2	2, 3, 4	256	1000	0.256	256	260	0.4	0.4	5.481	A
	Exit	1	1		767			767	766	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	335	1000	0.335	336	334	0.4	0.5	4.944	A
			2	1, 3, 4	455	1000	0.455	456	443	0.6	0.7	5.771	A
		2	1	(1, 2, 3, 4)	791			791	779	0.0	0.0	0.184	A
	Exit	1	1		1087			1087	1080	0.0	0.0	0.000	A
2	Entry	1	1	3	687	1000	0.687	690	681	0.9	1.6	8.437	A
			2	1, 2, 3, 4	693	1000	0.693	696	692	1.1	1.6	8.482	A
	Exit	1	1		815			815	824	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	764	1536	0.498	767	761	0.7	0.8	5.142	A
			2	2, 3	761	1536	0.496	761	770	0.9	1.3	5.207	A
	Exit	1	1		2175			2175	2162	0.0	0.0	0.000	A
4	Entry	1	1	1	1282	1000	1.282	1002	995	28.2	97.9	231.149	F
			2	2, 3, 4	313	1000	0.313	311	315	0.4	0.6	5.651	A
	Exit	1	1		942			942	926	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	328	1000	0.328	330	337	0.5	0.3	4.926	A
			2	1, 3, 4	439	1000	0.439	442	448	0.7	0.7	5.712	A
		2	1	(1, 2, 3, 4)	767			768	785	0.0	0.0	0.140	A
	Exit	1	1		1074			1074	1079	0.0	0.0	0.000	A
2	Entry	1	1	3	690	1000	0.690	692	693	1.6	1.5	8.566	A
			2	1, 2, 3, 4	697	1000	0.697	699	695	1.6	1.6	8.636	A
	Exit	1	1		828			828	830	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	780	1542	0.506	779	780	0.8	1.1	5.532	A
			2	2, 3	771	1542	0.500	770	775	1.3	1.4	5.453	A
	Exit	1	1		2168			2168	2185	0.0	0.0	0.000	A
4	Entry	1	1	1	1265	1000	1.265	991	994	97.9	168.7	490.135	F
			2	2, 3, 4	311	1000	0.311	312	318	0.6	0.5	6.050	A
	Exit	1	1		945			945	946	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	256	1003	0.256	258	263	0.3	0.4	4.631	A
			2	1, 3, 4	356	1003	0.355	358	372	0.7	0.5	5.141	A
		2	1	(1, 2, 3, 4)	612			612	634	0.0	0.0	0.063	A
	Exit	1	1		1065			1065	1059	0.0	0.0	0.000	A
2	Entry	1	1	3	555	1000	0.555	556	552	1.5	1.0	6.285	A
			2	1, 2, 3, 4	569	1000	0.569	568	563	1.6	1.1	6.276	A
	Exit	1	1		682			682	679	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	627	1569	0.400	628	634	1.1	0.8	4.503	A
			2	2, 3	639	1569	0.408	639	637	1.4	0.8	4.349	A
	Exit	1	1		1752			1752	1757	0.0	0.0	0.000	A
4	Entry	1	1	1	1043	1000	1.043	996	989	168.7	183.0	638.500	F
			2	2, 3, 4	262	1000	0.262	261	257	0.5	0.4	5.319	A
	Exit	1	1		764			764	772	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	225	1028	0.218	225	223	0.4	0.3	4.288	A
			2	1, 3, 4	321	1028	0.312	319	318	0.5	0.6	4.757	A
		2	1	(1, 2, 3, 4)	546			546	541	0.0	0.0	0.013	A
	Exit	1	1		1063			1063	1068	0.0	0.0	0.000	A
2	Entry	1	1	3	459	1001	0.458	459	467	1.0	0.8	5.550	A
			2	1, 2, 3, 4	464	1001	0.464	465	473	1.1	0.7	5.546	A
	Exit	1	1		554			554	557	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	530	1586	0.334	531	530	0.8	0.6	3.933	A
			2	2, 3	517	1586	0.326	518	522	0.8	0.5	3.783	A
	Exit	1	1		1466			1466	1482	0.0	0.0	0.000	A
4	Entry	1	1	1	872	1000	0.872	1005	1009	183.0	148.7	547.744	F
			2	2, 3, 4	210	1000	0.210	211	214	0.4	0.2	5.235	A
	Exit	1	1		650			650	650	0.0	0.0	0.000	A

Appendix 5 – Committed Junction Improvement Schemes

REV.	DETAILS	DRAWN	CHECKED	DATE	REV.	DETAILS	DRAWN	CHECKED	DATE
A	VARIOUS AMENDMENTS	AH	SR	08.10.17					
B	VARIOUS AMENDMENTS	JD	SR	23.10.18					
C	ROAD HATCHING ADDED	JD	SR	29.11.18					
D	KEY AMENDED	JD	SR	04.12.18					
E	AMENDED TO RSA 1 COMMENTS	JD	SR	19.06.19					
F	AMENDED TO RSA 1 COMMENTS	JD	SR	03.07.19					
G	AMENDED TO RSA 1 COMMENTS	JD	SR	09.08.19					
H	MINOR AMENDMENTS	JD	SR	10.06.20					

Notes:

KEY

HIGHWAY WORKS BOUNDARY

NOTE

VEGETATION WITHIN VISIBILITY SPLAYS TO BE REMOVED

0 12.5 25 m

1:500 @ A1; 1:1000 @ A3

PROJECT: HORNDEAN

CLIENT: BLOOR HOMES SOUTHERN

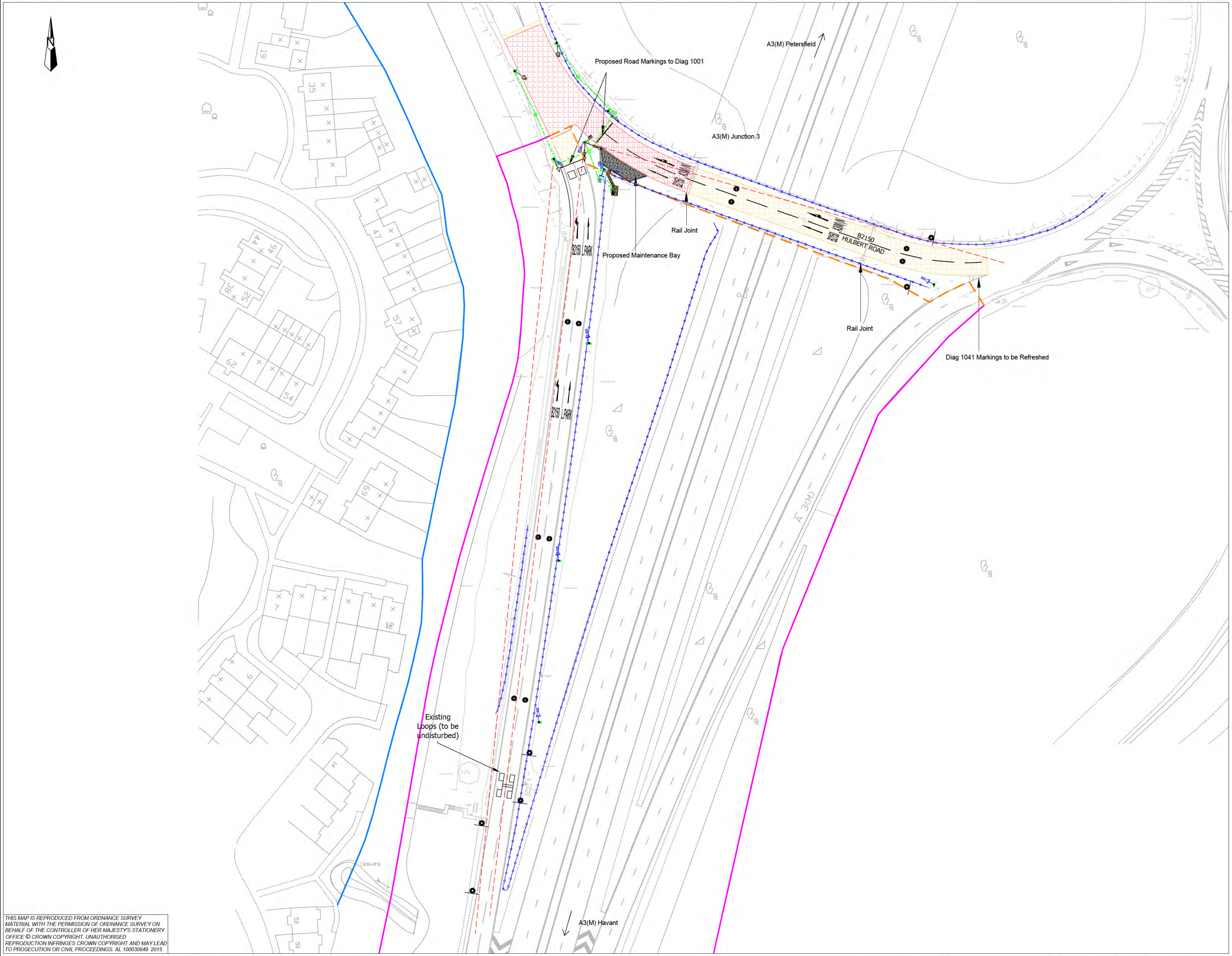
DRAWING TITLE: GENERAL ARRANGEMENT - SHEET 2 OF 7

vectos
highway infrastructure specialists

Oxford Place, 61 Oxford Street, Manchester, M1 6EQ
t: 0161 228 1008 e: manchester@vectos.co.uk

DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
AH	SR	20.05.18	1:500 @ A1	VD18678/100-02	H

I:\JOBS\2018\VD18678 Horndean - Bridge Review\2. DESIGN\CAD\ VD18678-100 General Arrangement.dwg



RESIDUAL DESIGN HAZARDS

THE FOLLOWING HAS BEEN COLLECTED FROM THE PRE-CONSTRUCTION INFORMATION AND HIGHLIGHTS KNOWN RESIDUAL HAZARDS.

KEY Risk ref. HS-# = HEALTH AND SAFETY RISK REFERENCE NUMBER
E-# = ENVIRONMENT RISK REFERENCE NUMBER

HEATH & SAFETY RISKS ARE AS FOLLOWS:
HS-01-GAS LINE
HS-02 - WORKING AT HEIGHT
HS-03 - BRIDGE JOINTS
HS-04 - SURFACE DRAINAGE

TRAFFIC SIGNAL EQUIPMENT KEY (DESIGN WORKING IN PROGRESS)

- Telent OPTIMA ELV traffic signal controller, with NAL controller cabinet base
- Electrical feeder pillar
- 4m low access slotless passively-safe signal pole
- 6m low access slotless passively-safe signal pole
- RAG primary signal head
- RAG secondary signal head
- Double RAG primary signal head
- AGD 316 stopline detector
- Magnetometer access point
- Magnetometer repeater unit
- CCTV camera
- Photoelectric cell
- 0.5m extension bracket
- NAL STAKKAbox square chamber 600mm x 600mm
- NAL STAKKAbox medium chamber 450mm x 450mm
- NAL pole retention socket RS115
- Large NAL pole retention socket RS168
- 100mm orange traffic signals duct (No. as indicated)
- 50mm black duct for electrical feed
- Hardstanding maintenance area
- Overhead stopline detection zone
- Magnetometer detector
- Existing vehicle restraint system
- (A) Phase identifier
- (1) Signal pole number

PAVEMENT

- HRA surface course inlay 40mm over 60mm binder course
- High friction surfacing (charcoal grey)
- HRA surface course inlay 45mm

MISCELLANEOUS

- Proposed white lining
- Proposed new traffic sign
- Existing detector loops
- Indicative HE maintenance liability boundary
- HE maintenance liability boundary as per Area 3 commission highway boundary plans route A3(M) sheet 4 Drawing No. 200661/A3(M)/04 Rev P1
- HE land boundary as shown on HM Land Registry information
- SSD visibility envelopes for signal heads
  - 215m SSD at A3(M) northbound offslip
  - 120m SSD at A3(M) junction 3 southern circulatory

REV	DETAILS	CHKD	APPD	DATE
P06	VISIBILITY ENVELOPE & SIGNAL POLE PAVED AREAS ADDED	TC	-	10/12/2019
C05	BOUNDARIES ADDED	TC	KP	22/02/2019
C04	UPDATED SIGNALS DESIGN	NK	-	23/01/2019
C03	NOTES AND DRAWING AMENDED	YB	DL	04/07/2018
C02	DUCTING ROUTE ALTERED	YB	RJW	06-03-17
C01	INITIAL ISSUE	MR	RJW	06/03/2017

CLIENT: highways england

AGENT: KIER

SCHEME NAME: A3(M) J3 Northbound Slip S278 Signalisation Scheme

DRAWING TITLE: General Arrangement Plan

DRAWN: DH	SCALE: 1:500	DRAWING STATUS: 02	
DESIGN: KB	DIMENSIONS: m	WORKING DRAWING	
CHKD: MR	ORIG DWG SIZE: A1	PRELIMINARY DRAWING	✓
APPD: RW	COPYRIGHT© KIER	EXTERNAL ISSUE	
DATE: 06/03/17		AS-BUILT	
SUITABILITY: S2	FOR INFORMATION		

DRAWING NUMBER

PROJECT | ORIGINATOR | VOLUME
517770 – KIER – HSN
A3(M) J3 – DR – D – 100-003
LOCATION | TYPE | ROLE | NUMBER

SCHEME REFERENCE No. SCH

REVISION P 06

Appendix 6 – ARCADY Outputs for Assessments Excluding Committed Development Flows

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Junction 3_A3(M).j9
Path: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Reports\Highways England Response\20-08-21 HE Note TN03\HE Review 301120\App 6 - ARCADY
Report generation date: 02/12/2020 15:37:22

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	[Lane Simulation] - ELM - DM							
Arm 1	1.5	6.45		A	1.3	5.16		A
Arm 2	2.2	6.62		A	2.7	7.25		A
Arm 3	84.6	139.07		F	2.7	5.50		A
Arm 4	5.7	18.23		C	173.3	483.50		F
	[Lane Simulation] - EMM - DS1							
Arm 1	1.5	6.27		A	1.2	5.64		A
Arm 2	2.7	7.28		A	3.0	7.70		A
Arm 3	106.8	193.72		F	2.6	5.10		A
Arm 4	5.8	19.29		C	172.7	491.11		F
	[Lane Simulation] - EML - DS2							
Arm 1	1.5	6.29		A	1.2	5.45		A
Arm 2	2.7	7.15		A	3.1	8.08		A
Arm 3	104.9	181.64		F	2.3	4.98		A
Arm 4	6.0	19.40		C	173.6	489.59		F

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay.

File summary

File Description

Title	Junction 3, A3(M)
Location	
Site number	
Date	26/09/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	62100616
Enumerator	CORP\UKAJT009
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			1014955662	311	58.99

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓
D4	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓
D5	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓
D6	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓
D7	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓
D8	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

ELM - DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	61.84	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Hulbert Road east	
2	A3(M) south	
3	Hulbert Road west	
4	A3(M) north	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	4.10	7.50	24.9	40.0	145.0	9.0	
2	6.00	6.90	5.7	50.0	145.0	5.0	
3	7.60	7.60	0.0	45.0	145.0	4.0	
4	6.50	6.50	0.0	50.0	145.0	26.0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.762	2597
2	0.951	2551
3	1.208	3386
4	0.716	2207

The slope and intercept shown above include any corrections and adjustments.

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2, 3	✓	4.00		1000	99999	
			2	1, 3, 4	✓	4.00		1000	99999	
		2	1	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	3		Infinity		1000	99999	
			2	1, 2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	1, 4		Infinity		1000	99999	
			2	2, 3		Infinity		1000	99999	
	Exit	1	1			Infinity				
4	Entry	1	1	1		Infinity		1000	99999	
			2	2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.381	1298
			2	0.381	1298
2	Entry	1	1	0.476	1276
			2	0.476	1276
3	Entry	1	1	0.604	1693
			2	0.604	1693
4	Entry	1	1	0.358	1104
			2	0.358	1104

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm			
			1	2	3	4
1	1	1		✓	✓	
		2	✓		✓	✓
	2	1	✓	✓	✓	✓
2	1	1			✓	
		2	✓	✓	✓	✓
3	1	1	✓			✓
		2		✓	✓	
4	1	1	✓			
		2		✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	ELM - DM	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	660	100.000
2		ONE HOUR	✓	1030	100.000
3		ONE HOUR	✓	1754	100.000
4		ONE HOUR	✓	959	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	241	404
	2	42	0	988	0
	3	842	353	0	559
	4	733	0	226	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.45	1.5	A	609	913
2	6.62	2.2	A	946	1419
3	139.07	84.6	F	1609	2413
4	18.23	5.7	C	878	1317

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	506	126	433	507	498	1225	0.0	0.7	4.614	A
2	772	193	666	772	775	274	0.0	1.2	4.902	A
3	1315	329	343	1317	1306	1095	0.0	2.9	8.219	A
4	730	182	932	726	724	729	0.0	2.0	8.399	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	596	149	520	597	591	1458	0.7	1.0	5.176	A
2	930	233	783	930	930	334	1.2	1.4	5.439	A
3	1584	396	403	1573	1555	1310	2.9	7.8	15.152	C
4	860	215	1111	867	858	865	2.0	2.4	10.706	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	729	182	642	728	724	1691	1.0	1.4	6.293	A
2	1136	284	959	1134	1129	411	1.4	2.2	6.412	A
3	1927	482	492	1787	1773	1601	7.8	49.3	63.700	F
4	1046	262	1288	1044	1039	991	2.4	5.7	16.504	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	733	183	644	730	724	1685	1.4	1.5	6.450	A
2	1142	285	960	1141	1135	414	2.2	2.2	6.624	A
3	1934	483	491	1794	1787	1610	49.3	84.6	139.070	F
4	1048	262	1280	1049	1056	1005	5.7	5.4	18.228	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	591	148	515	589	598	1538	1.5	1.0	5.223	A
2	928	232	773	927	928	331	2.2	1.5	5.502	A
3	1574	394	398	1718	1732	1302	84.6	45.2	131.052	F
4	858	215	1198	855	873	918	5.4	2.9	11.854	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	496	124	439	495	500	1256	1.0	0.7	4.772	A
2	769	192	656	771	779	278	1.5	1.0	4.981	A
3	1320	330	335	1375	1478	1093	45.2	6.3	40.027	E
4	725	181	972	723	725	738	2.9	1.9	8.331	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	128	1133	0.113	128	124	0.0	0.2	3.698	A
			2	1, 3, 4	378	1133	0.334	379	374	0.0	0.5	4.791	A
		2	1	(1, 2, 3, 4)	506			506	500	0.0	0.0	0.095	A
	Exit	1	1		1225			1225	1216	0.0	0.0	0.000	A
2	Entry	1	1	3	377	1005	0.375	376	377	0.0	0.6	4.887	A
			2	1, 2, 3, 4	395	1005	0.393	396	398	0.0	0.5	4.916	A
	Exit	1	1		274			274	273	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1053	1486	0.709	1055	1045	0.0	2.6	9.455	A
			2	2, 3	262	1486	0.176	262	261	0.0	0.3	3.261	A
	Exit	1	1		1095			1095	1094	0.0	0.0	0.000	A
4	Entry	1	1	1	558	1000	0.558	555	554	0.0	1.7	9.471	A
			2	2, 3, 4	172	1000	0.172	171	169	0.0	0.3	4.876	A
	Exit	1	1		729			729	720	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	154	1100	0.140	154	153	0.2	0.2	3.936	A
			2	1, 3, 4	443	1100	0.402	442	437	0.5	0.7	5.379	A
		2	1	(1, 2, 3, 4)	596			596	592	0.0	0.0	0.171	A
	Exit	1	1		1458			1458	1436	0.0	0.0	0.000	A
2	Entry	1	1	3	456	1001	0.456	457	457	0.6	0.7	5.375	A
			2	1, 2, 3, 4	474	1001	0.473	473	473	0.5	0.7	5.501	A
	Exit	1	1		334			334	334	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1265	1449	0.873	1254	1235	2.6	7.5	18.102	C
			2	2, 3	319	1449	0.220	319	320	0.3	0.3	3.553	A
	Exit	1	1		1310			1310	1310	0.0	0.0	0.000	A
4	Entry	1	1	1	660	1000	0.660	666	656	1.7	2.1	12.496	B
			2	2, 3, 4	201	1000	0.201	201	202	0.3	0.3	4.878	A
	Exit	1	1		865			865	853	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	197	1055	0.187	197	196	0.2	0.2	4.242	A
			2	1, 3, 4	532	1055	0.504	531	529	0.7	1.0	6.358	A
		2	1	(1, 2, 3, 4)	729			728	726	0.0	0.2	0.505	A
	Exit	1	1		1691			1691	1670	0.0	0.0	0.000	A
2	Entry	1	1	3	560	1000	0.560	558	556	0.7	1.1	6.344	A
			2	1, 2, 3, 4	576	1000	0.576	576	573	0.7	1.1	6.478	A
	Exit	1	1		411			411	409	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1533	1396	1.099	1394	1381	7.5	48.9	78.850	F
			2	2, 3	393	1396	0.282	393	392	0.3	0.4	3.948	A
	Exit	1	1		1601			1601	1597	0.0	0.0	0.000	A
4	Entry	1	1	1	799	1000	0.799	796	791	2.1	5.4	19.932	C
			2	2, 3, 4	248	1000	0.248	248	248	0.3	0.4	5.436	A
	Exit	1	1		991			991	989	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	198	1054	0.188	198	195	0.2	0.2	4.302	A
			2	1, 3, 4	535	1054	0.507	532	529	1.0	1.1	6.453	A
		2	1	(1, 2, 3, 4)	733			733	724	0.2	0.2	0.577	A
	Exit	1	1		1685			1685	1693	0.0	0.0	0.000	A
2	Entry	1	1	3	563	1000	0.563	562	560	1.1	1.1	6.563	A
			2	1, 2, 3, 4	579	1000	0.579	579	576	1.1	1.1	6.684	A
	Exit	1	1		414			414	407	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1537	1396	1.101	1397	1397	48.9	84.2	173.256	F
			2	2, 3	397	1396	0.284	397	390	0.4	0.4	3.941	A
	Exit	1	1		1610			1610	1602	0.0	0.0	0.000	A
4	Entry	1	1	1	801	1000	0.801	802	808	5.4	5.0	22.225	C
			2	2, 3, 4	247	1000	0.247	247	248	0.4	0.4	5.304	A
	Exit	1	1		1005			1005	999	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	152	1102	0.138	152	154	0.2	0.2	3.990	A
			2	1, 3, 4	439	1102	0.398	438	444	1.1	0.7	5.386	A
		2	1	(1, 2, 3, 4)	591			591	596	0.2	0.1	0.197	A
	Exit	1	1		1538			1538	1550	0.0	0.0	0.000	A
2	Entry	1	1	3	453	1000	0.453	452	455	1.1	0.8	5.442	A
			2	1, 2, 3, 4	475	1000	0.475	475	474	1.1	0.8	5.560	A
	Exit	1	1		331			331	332	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1256	1453	0.865	1400	1414	84.2	44.9	163.189	F
			2	2, 3	318	1453	0.219	318	318	0.4	0.3	3.656	A
	Exit	1	1		1302			1302	1313	0.0	0.0	0.000	A
4	Entry	1	1	1	661	1000	0.661	658	668	5.0	2.6	13.963	B
			2	2, 3, 4	197	1000	0.197	197	205	0.4	0.4	5.076	A
	Exit	1	1		918			918	936	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	122	1131	0.108	122	125	0.2	0.1	3.786	A
			2	1, 3, 4	374	1131	0.330	373	374	0.7	0.6	4.981	A
		2	1	(1, 2, 3, 4)	496			496	499	0.1	0.0	0.096	A
	Exit	1	1		1256			1256	1313	0.0	0.0	0.000	A
2	Entry	1	1	3	375	1005	0.373	377	381	0.8	0.5	4.910	A
			2	1, 2, 3, 4	394	1005	0.392	395	398	0.8	0.6	5.048	A
	Exit	1	1		278			278	280	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1053	1491	0.707	1110	1210	44.9	6.0	49.494	E
			2	2, 3	266	1491	0.179	265	268	0.3	0.3	3.231	A
	Exit	1	1		1093			1093	1102	0.0	0.0	0.000	A
4	Entry	1	1	1	551	1000	0.551	550	554	2.6	1.6	9.433	A
			2	2, 3, 4	174	1000	0.174	173	171	0.4	0.3	4.790	A
	Exit	1	1		738			738	787	0.0	0.0	0.000	A

ELM - DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 4 - Lane Simulation	Arm 4: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	154.46	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	ELM - DM	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	644	100.000
2		ONE HOUR	✓	1124	100.000
3		ONE HOUR	✓	1474	100.000
4		ONE HOUR	✓	1455	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	48	455	141
	2	19	0	1105	0
	3	37	640	0	797
	4	1150	0	305	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.16	1.3	A	588	881
2	7.25	2.7	A	1031	1546
3	5.60	2.7	A	1355	2032
4	483.50	173.3	F	1341	2011

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	477	119	722	478	485	895	0.0	0.6	4.398	A
2	843	211	678	843	838	522	0.0	1.3	4.992	A
3	1112	278	117	1110	1098	1405	0.0	1.5	3.809	A
4	1087	272	526	1091	1066	700	0.0	6.5	19.191	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	577	144	844	579	581	1038	0.6	0.8	4.761	A
2	1009	252	808	1004	1005	616	1.3	1.9	5.712	A
3	1320	330	137	1322	1328	1674	1.5	1.6	4.424	A
4	1314	328	621	1261	1232	838	6.5	27.5	57.580	F

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	716	179	1051	716	705	1055	0.8	1.3	5.157	A
2	1234	308	1013	1232	1235	754	1.9	2.5	7.172	A
3	1623	406	177	1623	1623	2067	1.6	2.7	5.505	A
4	1608	402	759	1347	1323	1041	27.5	96.0	180.736	F

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	711	178	1041	709	723	1059	1.3	1.2	5.121	A
2	1243	311	996	1241	1238	754	2.5	2.7	7.250	A
3	1607	402	179	1609	1611	2058	2.7	2.5	5.426	A
4	1621	405	761	1340	1332	1027	96.0	164.7	374.375	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	571	143	859	576	579	1052	1.2	0.5	4.758	A
2	1016	254	810	1016	1018	625	2.7	1.5	5.755	A
3	1345	336	143	1344	1334	1683	2.5	1.9	4.433	A
4	1320	330	633	1278	1279	854	164.7	173.3	483.497	F

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	472	118	728	473	474	1053	0.5	0.6	4.421	A
2	838	210	675	837	840	526	1.5	1.2	5.069	A
3	1119	280	116	1122	1116	1397	1.9	1.1	3.831	A
4	1096	274	528	1254	1239	710	173.3	140.1	352.072	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	220	1031	0.213	219	220	0.0	0.3	4.228	A
			2	1, 3, 4	258	1031	0.250	259	266	0.0	0.3	4.520	A
		2	1	(1, 2, 3, 4)	477			477	488	0.0	0.0	0.009	A
	Exit	1	1		895			895	876	0.0	0.0	0.000	A
2	Entry	1	1	3	416	1003	0.415	415	418	0.0	0.7	4.906	A
			2	1, 2, 3, 4	428	1003	0.426	428	421	0.0	0.6	5.079	A
	Exit	1	1		522			522	512	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	629	1623	0.387	627	626	0.0	0.8	4.032	A
			2	2, 3	484	1623	0.298	483	473	0.0	0.6	3.513	A
	Exit	1	1		1405			1405	1397	0.0	0.0	0.000	A
4	Entry	1	1	1	849	1000	0.849	852	834	0.0	6.3	22.967	C
			2	2, 3, 4	238	1000	0.238	238	232	0.0	0.3	5.190	A
	Exit	1	1		700			700	704	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	267	1008	0.265	267	266	0.3	0.4	4.482	A
			2	1, 3, 4	310	1008	0.308	312	315	0.3	0.4	4.958	A
		2	1	(1, 2, 3, 4)	577			577	582	0.0	0.0	0.022	A
	Exit	1	1		1038			1038	1013	0.0	0.0	0.000	A
2	Entry	1	1	3	497	1000	0.497	494	495	0.7	0.9	5.758	A
			2	1, 2, 3, 4	512	1000	0.512	510	511	0.6	0.9	5.667	A
	Exit	1	1		616			616	618	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	750	1610	0.466	752	753	0.8	1.1	4.841	A
			2	2, 3	569	1610	0.354	570	575	0.6	0.5	3.876	A
	Exit	1	1		1674			1674	1669	0.0	0.0	0.000	A
4	Entry	1	1	1	1041	1000	1.041	988	962	6.3	27.1	71.122	F
			2	2, 3, 4	273	1000	0.273	273	270	0.3	0.5	5.381	A
	Exit	1	1		838			838	846	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	327	1000	0.327	327	319	0.4	0.5	4.817	A
			2	1, 3, 4	389	1000	0.389	388	386	0.4	0.7	5.323	A
		2	1	(1, 2, 3, 4)	716			716	707	0.0	0.0	0.064	A
	Exit	1	1		1055			1055	1052	0.0	0.0	0.000	A
2	Entry	1	1	3	616	1000	0.616	614	615	0.9	1.3	7.093	A
			2	1, 2, 3, 4	618	1000	0.618	618	620	0.9	1.2	7.250	A
	Exit	1	1		754			754	754	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	924	1586	0.583	922	923	1.1	1.8	6.212	A
			2	2, 3	699	1586	0.441	701	700	0.5	0.9	4.575	A
	Exit	1	1		2067			2067	2046	0.0	0.0	0.000	A
4	Entry	1	1	1	1260	1000	1.260	997	989	27.1	95.4	227.110	F
			2	2, 3, 4	348	1000	0.348	350	334	0.5	0.5	5.852	A
	Exit	1	1		1041			1041	1035	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	323	1000	0.323	322	325	0.5	0.5	4.789	A
			2	1, 3, 4	388	1000	0.388	386	398	0.7	0.7	5.270	A
		2	1	(1, 2, 3, 4)	711			711	723	0.0	0.0	0.068	A
	Exit	1	1		1059			1059	1058	0.0	0.0	0.000	A
2	Entry	1	1	3	621	1000	0.621	621	618	1.3	1.3	7.178	A
			2	1, 2, 3, 4	622	1000	0.622	620	620	1.2	1.4	7.323	A
	Exit	1	1		754			754	747	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	907	1585	0.572	907	916	1.8	1.6	6.036	A
			2	2, 3	700	1585	0.442	703	695	0.9	0.9	4.621	A
	Exit	1	1		2058			2058	2061	0.0	0.0	0.000	A
4	Entry	1	1	1	1285	1000	1.285	1002	999	95.4	164.2	471.307	F
			2	2, 3, 4	336	1000	0.336	339	333	0.5	0.6	6.017	A
	Exit	1	1		1027			1027	1037	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	258	1005	0.256	260	262	0.5	0.2	4.543	A
			2	1, 3, 4	313	1005	0.311	315	318	0.7	0.3	4.870	A
		2	1	(1, 2, 3, 4)	571			571	577	0.0	0.0	0.036	A
	Exit	1	1		1052			1052	1052	0.0	0.0	0.000	A
2	Entry	1	1	3	499	1000	0.499	498	505	1.3	0.8	5.696	A
			2	1, 2, 3, 4	518	1000	0.518	518	513	1.4	0.7	5.813	A
	Exit	1	1		625			625	629	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	763	1607	0.475	763	749	1.6	1.1	4.711	A
			2	2, 3	582	1607	0.363	581	585	0.9	0.8	4.076	A
	Exit	1	1		1683			1683	1686	0.0	0.0	0.000	A
4	Entry	1	1	1	1041	1000	1.041	999	1002	164.2	172.8	611.519	F
			2	2, 3, 4	279	1000	0.279	279	277	0.6	0.5	5.570	A
	Exit	1	1		854			854	843	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	209	1028	0.203	209	209	0.2	0.2	4.352	A
			2	1, 3, 4	263	1028	0.256	264	266	0.3	0.4	4.468	A
		2	1	(1, 2, 3, 4)	472			472	474	0.0	0.0	0.004	A
	Exit	1	1		1053			1053	1042	0.0	0.0	0.000	A
2	Entry	1	1	3	415	1004	0.413	413	417	0.8	0.6	5.046	A
			2	1, 2, 3, 4	423	1004	0.421	424	423	0.7	0.6	5.091	A
	Exit	1	1		526			526	521	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	631	1623	0.389	634	630	1.1	0.5	4.052	A
			2	2, 3	489	1623	0.301	488	485	0.8	0.5	3.543	A
	Exit	1	1		1397			1397	1398	0.0	0.0	0.000	A
4	Entry	1	1	1	855	1000	0.855	1014	1001	172.8	139.8	517.461	F
			2	2, 3, 4	241	1000	0.241	240	238	0.5	0.3	5.409	A
	Exit	1	1		710			710	708	0.0	0.0	0.000	A

EMM - DS1, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 3 - Lane Simulation	Arm 3: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	81.37	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	EMM - DS1	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	704	100.000
2		ONE HOUR	✓	1127	100.000
3		ONE HOUR	✓	1740	100.000
4		ONE HOUR	✓	938	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	274	415
	2	42	0	1085	0
	3	840	312	0	588
	4	741	0	197	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.27	1.5	A	644	967
2	7.28	2.7	A	1037	1556
3	193.72	106.8	F	1590	2385
4	19.29	5.8	C	860	1290

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	526	132	378	526	525	1233	0.0	0.7	4.718	A
2	856	214	659	858	838	245	0.0	1.0	5.032	A
3	1316	329	343	1325	1305	1173	0.0	3.3	9.008	A
4	696	174	912	700	703	756	0.0	1.5	8.243	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	631	158	460	630	629	1445	0.7	0.9	4.930	A
2	1018	254	795	1017	1006	295	1.0	1.7	5.705	A
3	1543	386	416	1539	1527	1395	3.3	8.3	17.080	C
4	845	211	1062	844	843	893	1.5	2.5	10.685	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	769	192	549	769	768	1680	0.9	1.5	6.102	A
2	1236	309	967	1233	1232	351	1.7	2.7	7.282	A
3	1903	476	506	1729	1716	1695	8.3	57.6	75.859	F
4	1029	257	1205	1024	1017	1030	2.5	5.8	17.551	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	775	194	565	774	773	1682	1.5	1.3	6.269	A
2	1247	312	979	1242	1240	360	2.7	2.5	7.182	A
3	1917	479	508	1718	1724	1712	57.6	106.8	176.694	F
4	1041	260	1200	1047	1045	1026	5.8	5.5	19.289	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	635	159	460	632	639	1538	1.3	1.1	5.343	A
2	1011	253	791	1013	1012	301	2.5	1.4	5.796	A
3	1559	390	407	1712	1690	1397	106.8	75.9	193.722	F
4	836	209	1165	833	851	954	5.5	2.9	12.277	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	531	133	371	533	529	1324	1.1	0.7	4.609	A
2	856	214	661	855	853	242	1.4	1.4	5.189	A
3	1301	325	347	1459	1561	1169	75.9	13.2	79.884	F
4	713	178	978	716	714	828	2.9	1.5	8.073	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	139	1154	0.120	139	137	0.0	0.1	3.646	A
			2	1, 3, 4	387	1154	0.335	386	388	0.0	0.6	4.926	A
		2	1	(1, 2, 3, 4)	526			526	528	0.0	0.0	0.126	A
	Exit	1	1		1233			1233	1219	0.0	0.0	0.000	A
2	Entry	1	1	3	415	1005	0.413	416	409	0.0	0.5	4.948	A
			2	1, 2, 3, 4	441	1005	0.438	441	428	0.0	0.6	5.111	A
	Exit	1	1		245			245	245	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1083	1486	0.729	1092	1072	0.0	3.0	10.291	B
			2	2, 3	233	1486	0.157	233	234	0.0	0.3	3.096	A
	Exit	1	1		1173			1173	1152	0.0	0.0	0.000	A
4	Entry	1	1	1	551	1000	0.551	554	556	0.0	1.3	9.146	A
			2	2, 3, 4	146	1000	0.146	146	148	0.0	0.2	4.818	A
	Exit	1	1		756			756	753	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	166	1123	0.148	166	168	0.1	0.2	3.939	A
			2	1, 3, 4	464	1123	0.413	464	461	0.6	0.6	5.098	A
		2	1	(1, 2, 3, 4)	631			630	630	0.0	0.1	0.141	A
	Exit	1	1		1445			1445	1438	0.0	0.0	0.000	A
2	Entry	1	1	3	502	1000	0.502	502	493	0.5	0.8	5.679	A
			2	1, 2, 3, 4	516	1000	0.516	514	513	0.6	0.9	5.731	A
	Exit	1	1		295			295	291	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1260	1441	0.874	1257	1248	3.0	8.0	20.093	C
			2	2, 3	283	1441	0.196	282	279	0.3	0.3	3.343	A
	Exit	1	1		1395			1395	1390	0.0	0.0	0.000	A
4	Entry	1	1	1	665	1000	0.665	666	667	1.3	2.3	12.235	B
			2	2, 3, 4	179	1000	0.179	178	176	0.2	0.2	4.802	A
	Exit	1	1		893			893	886	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	217	1089	0.199	217	218	0.2	0.2	4.259	A
			2	1, 3, 4	553	1089	0.508	552	551	0.6	1.2	6.221	A
		2	1	(1, 2, 3, 4)	769			770	771	0.1	0.1	0.435	A
	Exit	1	1		1680			1680	1651	0.0	0.0	0.000	A
2	Entry	1	1	3	612	1000	0.612	611	613	0.8	1.2	7.153	A
			2	1, 2, 3, 4	625	1000	0.625	622	619	0.9	1.5	7.410	A
	Exit	1	1		351			351	356	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1571	1387	1.132	1396	1377	8.0	57.3	91.458	F
			2	2, 3	332	1387	0.239	333	339	0.3	0.3	3.789	A
	Exit	1	1		1695			1695	1698	0.0	0.0	0.000	A
4	Entry	1	1	1	814	1000	0.814	808	801	2.3	5.6	20.905	C
			2	2, 3, 4	215	1000	0.215	216	216	0.2	0.2	4.926	A
	Exit	1	1		1030			1030	1028	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	218	1083	0.202	218	216	0.2	0.3	4.349	A
			2	1, 3, 4	558	1083	0.515	556	557	1.2	1.0	6.310	A
		2	1	(1, 2, 3, 4)	775			776	772	0.1	0.1	0.504	A
	Exit	1	1		1682			1682	1683	0.0	0.0	0.000	A
2	Entry	1	1	3	617	1000	0.617	616	613	1.2	1.2	7.120	A
			2	1, 2, 3, 4	629	1000	0.629	626	626	1.5	1.3	7.242	A
	Exit	1	1		360			360	358	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1575	1386	1.137	1374	1383	57.3	106.5	213.893	F
			2	2, 3	342	1386	0.247	343	341	0.3	0.3	3.793	A
	Exit	1	1		1712			1712	1713	0.0	0.0	0.000	A
4	Entry	1	1	1	819	1000	0.819	825	822	5.6	5.1	23.115	C
			2	2, 3, 4	223	1000	0.223	222	223	0.2	0.5	5.149	A
	Exit	1	1		1026			1026	1027	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	176	1123	0.156	174	177	0.3	0.3	3.977	A
			2	1, 3, 4	459	1123	0.409	458	462	1.0	0.8	5.526	A
		2	1	(1, 2, 3, 4)	635			635	638	0.1	0.0	0.251	A
	Exit	1	1		1538			1538	1543	0.0	0.0	0.000	A
2	Entry	1	1	3	494	1001	0.494	495	496	1.2	0.8	5.746	A
			2	1, 2, 3, 4	516	1001	0.516	518	516	1.3	0.7	5.844	A
	Exit	1	1		301			301	294	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1274	1447	0.880	1427	1410	106.5	75.6	234.905	F
			2	2, 3	286	1447	0.197	285	279	0.3	0.3	3.421	A
	Exit	1	1		1397			1397	1401	0.0	0.0	0.000	A
4	Entry	1	1	1	661	1000	0.661	658	674	5.1	2.7	14.237	B
			2	2, 3, 4	175	1000	0.175	175	178	0.5	0.2	4.880	A
	Exit	1	1		954			954	955	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	137	1157	0.118	137	136	0.3	0.2	3.697	A
			2	1, 3, 4	395	1157	0.341	396	393	0.8	0.5	4.742	A
		2	1	(1, 2, 3, 4)	531			531	528	0.0	0.0	0.135	A
	Exit	1	1		1324			1324	1374	0.0	0.0	0.000	A
2	Entry	1	1	3	424	1006	0.421	423	422	0.8	0.7	5.121	A
			2	1, 2, 3, 4	433	1006	0.430	432	431	0.7	0.7	5.256	A
	Exit	1	1		242			242	247	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1071	1483	0.722	1229	1325	75.6	13.0	97.184	F
			2	2, 3	230	1483	0.155	230	236	0.3	0.2	3.117	A
	Exit	1	1		1169			1169	1173	0.0	0.0	0.000	A
4	Entry	1	1	1	572	1000	0.572	575	567	2.7	1.2	9.025	A
			2	2, 3, 4	141	1000	0.141	141	148	0.2	0.2	4.490	A
	Exit	1	1		828			828	863	0.0	0.0	0.000	A

EMM - DS1, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 4 - Lane Simulation	Arm 4: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	155.87	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	EMM - DS1	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	707	100.000
2		ONE HOUR	✓	1209	100.000
3		ONE HOUR	✓	1301	100.000
4		ONE HOUR	✓	1438	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	48	448	211
	2	19	0	1190	0
	3	41	640	0	620
	4	1155	0	283	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.64	1.2	A	651	976
2	7.70	3.0	A	1106	1659
3	5.10	2.6	A	1201	1802
4	491.11	172.7	F	1321	1981

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	534	133	683	531	523	909	0.0	0.9	4.610	A
2	911	228	705	913	907	509	0.0	1.3	5.210	A
3	969	242	175	965	968	1443	0.0	1.4	3.711	A
4	1063	266	518	1073	1057	622	0.0	7.1	21.415	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	624	156	823	627	630	1033	0.9	0.8	4.975	A
2	1058	265	835	1057	1081	614	1.3	2.2	6.128	A
3	1175	294	198	1174	1181	1694	1.4	1.4	4.131	A
4	1285	321	626	1230	1214	745	7.1	26.4	57.644	F

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	778	194	1019	777	780	1078	0.8	1.2	5.638	A
2	1349	337	1039	1345	1332	758	2.2	3.0	7.696	A
3	1435	359	261	1429	1425	2123	1.4	2.6	4.863	A
4	1597	399	774	1324	1305	917	26.4	94.8	178.173	F

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	780	195	1015	783	776	1056	1.2	1.2	5.505	A
2	1352	338	1045	1353	1330	753	3.0	2.7	7.677	A
3	1440	360	256	1442	1443	2142	2.6	2.2	5.102	A
4	1577	394	767	1304	1304	932	94.8	163.4	377.414	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	651	163	833	651	642	1071	1.2	0.9	5.121	A
2	1057	264	857	1061	1080	627	2.7	1.5	6.131	A
3	1177	294	213	1177	1173	1705	2.2	1.5	4.172	A
4	1305	326	634	1270	1258	757	163.4	172.7	491.113	F

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	536	134	713	535	533	1058	0.9	0.7	4.598	A
2	907	227	715	900	915	533	1.5	1.8	5.439	A
3	1013	253	173	1015	992	1442	1.5	1.0	3.760	A
4	1096	274	545	1226	1220	643	172.7	138.8	358.326	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	223	1043	0.214	222	217	0.0	0.4	4.247	A
			2	1, 3, 4	311	1043	0.298	309	306	0.0	0.5	4.789	A
		2	1	(1, 2, 3, 4)	534			534	526	0.0	0.0	0.047	A
	Exit	1	1		909			909	892	0.0	0.0	0.000	A
2	Entry	1	1	3	449	1002	0.448	450	448	0.0	0.7	5.250	A
			2	1, 2, 3, 4	462	1002	0.461	463	459	0.0	0.6	5.171	A
	Exit	1	1		509			509	505	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	495	1587	0.312	493	497	0.0	0.7	3.818	A
			2	2, 3	475	1587	0.299	472	471	0.0	0.7	3.599	A
	Exit	1	1		1443			1443	1436	0.0	0.0	0.000	A
4	Entry	1	1	1	854	1000	0.854	863	847	0.0	6.9	25.381	D
			2	2, 3, 4	210	1000	0.210	211	210	0.0	0.2	4.943	A
	Exit	1	1		622			622	622	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	268	1010	0.265	269	267	0.4	0.3	4.635	A
			2	1, 3, 4	357	1010	0.353	359	363	0.5	0.4	5.136	A
		2	1	(1, 2, 3, 4)	624			625	630	0.0	0.0	0.052	A
	Exit	1	1		1033			1033	1017	0.0	0.0	0.000	A
2	Entry	1	1	3	527	1000	0.526	528	542	0.7	1.0	6.053	A
			2	1, 2, 3, 4	532	1000	0.532	529	539	0.6	1.2	6.202	A
	Exit	1	1		614			614	625	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	602	1573	0.383	601	599	0.7	0.7	4.128	A
			2	2, 3	572	1573	0.364	572	582	0.7	0.7	4.134	A
	Exit	1	1		1694			1694	1720	0.0	0.0	0.000	A
4	Entry	1	1	1	1036	1000	1.036	979	961	6.9	26.1	70.307	F
			2	2, 3, 4	249	1000	0.249	251	253	0.2	0.3	5.503	A
	Exit	1	1		745			745	744	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	338	1000	0.338	337	335	0.3	0.6	4.985	A
			2	1, 3, 4	440	1000	0.440	441	445	0.4	0.7	5.864	A
		2	1	(1, 2, 3, 4)	778			778	782	0.0	0.0	0.154	A
	Exit	1	1		1078			1078	1061	0.0	0.0	0.000	A
2	Entry	1	1	3	670	1000	0.670	667	661	1.0	1.6	7.676	A
			2	1, 2, 3, 4	679	1000	0.679	679	671	1.2	1.4	7.716	A
	Exit	1	1		758			758	761	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	729	1535	0.475	724	716	0.7	1.3	4.917	A
			2	2, 3	706	1535	0.460	705	709	0.7	1.4	4.807	A
	Exit	1	1		2123			2123	2112	0.0	0.0	0.000	A
4	Entry	1	1	1	1285	1000	1.285	1009	995	26.1	94.5	220.620	F
			2	2, 3, 4	312	1000	0.312	315	310	0.3	0.4	5.704	A
	Exit	1	1		917			917	908	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	338	1001	0.338	338	334	0.6	0.4	4.881	A
			2	1, 3, 4	444	1001	0.444	445	442	0.7	0.7	5.664	A
		2	1	(1, 2, 3, 4)	780			782	776	0.0	0.0	0.176	A
	Exit	1	1		1056			1056	1057	0.0	0.0	0.000	A
2	Entry	1	1	3	668	1000	0.668	669	660	1.6	1.4	7.649	A
			2	1, 2, 3, 4	684	1000	0.684	684	670	1.4	1.3	7.704	A
	Exit	1	1		753			753	764	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	739	1538	0.481	741	732	1.3	1.1	5.107	A
			2	2, 3	701	1538	0.456	701	711	1.4	1.1	5.097	A
	Exit	1	1		2142			2142	2113	0.0	0.0	0.000	A
4	Entry	1	1	1	1264	1000	1.264	991	993	94.5	163.0	468.450	F
			2	2, 3, 4	313	1000	0.313	314	311	0.4	0.5	6.083	A
	Exit	1	1		932			932	919	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	274	1007	0.272	275	269	0.4	0.3	4.642	A
			2	1, 3, 4	376	1007	0.374	376	373	0.7	0.6	5.335	A
		2	1	(1, 2, 3, 4)	651			650	641	0.0	0.0	0.079	A
	Exit	1	1		1071			1071	1059	0.0	0.0	0.000	A
2	Entry	1	1	3	520	1000	0.520	522	535	1.4	0.8	6.094	A
			2	1, 2, 3, 4	537	1000	0.537	540	545	1.3	0.8	6.168	A
	Exit	1	1		627			627	619	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	594	1564	0.380	597	595	1.1	0.8	4.133	A
			2	2, 3	582	1564	0.372	581	578	1.1	0.7	4.212	A
	Exit	1	1		1705			1705	1723	0.0	0.0	0.000	A
4	Entry	1	1	1	1053	1000	1.053	1018	1004	163.0	172.3	608.270	F
			2	2, 3, 4	252	1000	0.252	253	254	0.5	0.3	5.376	A
	Exit	1	1		757			757	751	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	220	1032	0.213	220	219	0.3	0.3	4.256	A
			2	1, 3, 4	316	1032	0.306	315	313	0.6	0.4	4.792	A
		2	1	(1, 2, 3, 4)	536			536	532	0.0	0.0	0.027	A
	Exit	1	1		1058			1058	1051	0.0	0.0	0.000	A
2	Entry	1	1	3	446	1001	0.445	443	450	0.8	0.9	5.474	A
			2	1, 2, 3, 4	460	1001	0.460	458	465	0.8	0.9	5.405	A
	Exit	1	1		533			533	523	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	517	1588	0.326	519	506	0.8	0.4	3.884	A
			2	2, 3	496	1588	0.312	495	487	0.7	0.6	3.632	A
	Exit	1	1		1442			1442	1451	0.0	0.0	0.000	A
4	Entry	1	1	1	878	1000	0.878	1008	1005	172.3	138.4	512.672	F
			2	2, 3, 4	218	1000	0.218	218	215	0.3	0.4	4.900	A
	Exit	1	1		643			643	635	0.0	0.0	0.000	A

EML - DS2, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 3 - Lane Simulation	Arm 3: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	77.08	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	EML - DS2	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	704	100.000
2		ONE HOUR	✓	1121	100.000
3		ONE HOUR	✓	1741	100.000
4		ONE HOUR	✓	938	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	273	416
	2	42	0	1079	0
	3	838	314	0	589
	4	740	0	198	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.29	1.5	A	647	970
2	7.15	2.7	A	1027	1540
3	181.64	104.9	F	1599	2398
4	19.40	6.0	C	860	1290

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	540	135	394	541	534	1215	0.0	0.7	4.649	A
2	849	212	681	852	842	254	0.0	1.3	5.118	A
3	1335	334	356	1332	1299	1177	0.0	3.5	8.752	A
4	703	176	903	706	704	784	0.0	1.6	8.339	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	633	158	460	632	628	1459	0.7	0.9	5.007	A
2	1002	251	799	1004	1004	293	1.3	1.7	5.709	A
3	1552	388	404	1565	1541	1398	3.5	9.0	18.516	C
4	843	211	1072	846	842	896	1.6	2.7	10.499	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	769	192	563	772	766	1661	0.9	1.3	5.975	A
2	1234	308	970	1235	1225	365	1.7	2.4	7.146	A
3	1909	477	502	1736	1719	1703	9.0	58.0	75.615	F
4	1026	256	1204	1020	1014	1034	2.7	5.2	16.958	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	774	193	568	772	779	1686	1.3	1.5	6.287	A
2	1225	306	972	1222	1236	368	2.4	2.7	7.144	A
3	1922	480	501	1749	1730	1693	58.0	104.9	175.846	F
4	1045	261	1216	1037	1031	1034	5.2	6.0	19.400	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	635	159	457	635	638	1547	1.5	0.9	5.234	A
2	1006	251	792	1006	1004	300	2.7	1.7	5.657	A
3	1570	393	407	1708	1706	1391	104.9	70.1	181.638	F
4	843	211	1159	845	856	955	6.0	2.5	12.333	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	531	133	371	533	530	1303	0.9	0.7	4.595	A
2	843	211	666	848	845	237	1.7	1.1	5.137	A
3	1305	326	348	1453	1538	1166	70.1	13.3	75.706	F
4	698	175	977	696	706	824	2.5	1.6	8.061	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	137	1148	0.120	137	137	0.0	0.2	3.603	A
			2	1, 3, 4	403	1148	0.351	404	398	0.0	0.5	4.846	A
		2	1	(1, 2, 3, 4)	540			540	537	0.0	0.0	0.121	A
	Exit	1	1		1215			1215	1206	0.0	0.0	0.000	A
2	Entry	1	1	3	420	1003	0.419	421	415	0.0	0.6	5.028	A
			2	1, 2, 3, 4	429	1003	0.428	431	426	0.0	0.6	5.205	A
	Exit	1	1		254			254	248	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1092	1478	0.739	1090	1062	0.0	3.2	9.974	A
			2	2, 3	244	1478	0.165	242	237	0.0	0.3	3.228	A
	Exit	1	1		1177			1177	1167	0.0	0.0	0.000	A
4	Entry	1	1	1	552	1000	0.552	554	553	0.0	1.4	9.304	A
			2	2, 3, 4	151	1000	0.151	152	151	0.0	0.2	4.771	A
	Exit	1	1		784			784	757	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	175	1123	0.156	174	170	0.2	0.2	3.868	A
			2	1, 3, 4	458	1123	0.408	458	458	0.5	0.7	5.147	A
		2	1	(1, 2, 3, 4)	633			633	629	0.0	0.0	0.204	A
	Exit	1	1		1459			1459	1445	0.0	0.0	0.000	A
2	Entry	1	1	3	492	1000	0.492	493	493	0.6	0.8	5.670	A
			2	1, 2, 3, 4	510	1000	0.510	510	511	0.6	0.9	5.746	A
	Exit	1	1		293			293	296	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1272	1449	0.878	1284	1258	3.2	8.7	21.834	C
			2	2, 3	280	1449	0.193	280	282	0.3	0.3	3.486	A
	Exit	1	1		1398			1398	1390	0.0	0.0	0.000	A
4	Entry	1	1	1	664	1000	0.664	667	664	1.4	2.4	11.978	B
			2	2, 3, 4	179	1000	0.179	179	178	0.2	0.2	4.918	A
	Exit	1	1		896			896	885	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	219	1084	0.202	220	217	0.2	0.2	4.115	A
			2	1, 3, 4	551	1084	0.508	552	549	0.7	0.9	6.002	A
		2	1	(1, 2, 3, 4)	769			770	767	0.0	0.1	0.507	A
	Exit	1	1		1661			1661	1654	0.0	0.0	0.000	A
2	Entry	1	1	3	608	1000	0.608	609	602	0.8	1.2	7.134	A
			2	1, 2, 3, 4	626	1000	0.626	627	623	0.9	1.2	7.158	A
	Exit	1	1		365			365	360	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1561	1390	1.124	1388	1375	8.7	57.8	91.381	F
			2	2, 3	347	1390	0.250	348	344	0.3	0.4	3.845	A
	Exit	1	1		1703			1703	1689	0.0	0.0	0.000	A
4	Entry	1	1	1	812	1000	0.812	805	803	2.4	4.9	20.042	C
			2	2, 3, 4	214	1000	0.214	215	211	0.2	0.3	5.150	A
	Exit	1	1		1034			1034	1021	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	221	1082	0.204	221	220	0.2	0.3	4.257	A
			2	1, 3, 4	553	1082	0.511	551	559	0.9	1.1	6.308	A
		2	1	(1, 2, 3, 4)	774			773	780	0.1	0.1	0.557	A
	Exit	1	1		1686			1686	1676	0.0	0.0	0.000	A
2	Entry	1	1	3	606	1000	0.606	604	608	1.2	1.3	7.141	A
			2	1, 2, 3, 4	620	1000	0.620	618	629	1.2	1.4	7.147	A
	Exit	1	1		368			368	364	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1570	1390	1.129	1398	1383	57.6	104.4	213.925	F
			2	2, 3	352	1390	0.253	350	347	0.4	0.5	3.824	A
	Exit	1	1		1693			1693	1705	0.0	0.0	0.000	A
4	Entry	1	1	1	827	1000	0.827	820	816	4.9	5.7	23.192	C
			2	2, 3, 4	218	1000	0.218	217	215	0.3	0.3	5.026	A
	Exit	1	1		1034			1034	1032	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	174	1124	0.154	173	174	0.3	0.2	3.995	A
			2	1, 3, 4	461	1124	0.410	461	464	1.1	0.7	5.412	A
		2	1	(1, 2, 3, 4)	635			635	636	0.1	0.0	0.215	A
	Exit	1	1		1547			1547	1553	0.0	0.0	0.000	A
2	Entry	1	1	3	493	1000	0.493	492	495	1.3	0.8	5.567	A
			2	1, 2, 3, 4	513	1000	0.513	514	509	1.4	0.9	5.745	A
	Exit	1	1		300			300	299	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1283	1447	0.887	1421	1420	104.4	69.8	221.272	F
			2	2, 3	287	1447	0.198	287	288	0.5	0.3	3.493	A
	Exit	1	1		1391			1391	1389	0.0	0.0	0.000	A
4	Entry	1	1	1	673	1000	0.673	674	683	5.7	2.3	14.272	B
			2	2, 3, 4	170	1000	0.170	170	173	0.3	0.2	4.816	A
	Exit	1	1		955			955	962	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	134	1157	0.116	134	137	0.2	0.2	3.703	A
			2	1, 3, 4	396	1157	0.342	398	394	0.7	0.4	4.776	A
		2	1	(1, 2, 3, 4)	531			530	529	0.0	0.0	0.097	A
	Exit	1	1		1303			1303	1355	0.0	0.0	0.000	A
2	Entry	1	1	3	411	1005	0.409	415	413	0.8	0.5	5.155	A
			2	1, 2, 3, 4	432	1005	0.430	433	433	0.9	0.7	5.120	A
	Exit	1	1		237			237	242	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	1079	1483	0.728	1227	1306	69.8	13.1	91.662	F
			2	2, 3	225	1483	0.152	226	231	0.3	0.2	3.217	A
	Exit	1	1		1166			1166	1168	0.0	0.0	0.000	A
4	Entry	1	1	1	553	1000	0.553	551	557	2.3	1.4	8.995	A
			2	2, 3, 4	145	1000	0.145	145	149	0.2	0.2	4.601	A
	Exit	1	1		824			824	853	0.0	0.0	0.000	A

EML - DS2, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Last Run	Lane Simulation	Arm 4 - Lane Simulation	Arm 4: Queue at end of modelled period is greater than 10 PCU. Delay is likely to have been underestimated.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	155.54	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	EML - DS2	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	700	100.000
2		ONE HOUR	✓	1216	100.000
3		ONE HOUR	✓	1305	100.000
4		ONE HOUR	✓	1440	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	48	441	211
	2	19	0	1197	0
	3	43	640	0	622
	4	1159	0	281	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.45	1.2	A	647	970
2	8.08	3.1	A	1111	1666
3	4.98	2.3	A	1201	1801
4	489.59	173.6	F	1322	1983

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	530	132	711	529	523	909	0.0	0.7	4.546	A
2	920	230	707	919	920	533	0.0	1.5	5.418	A
3	995	249	169	993	981	1457	0.0	1.3	3.728	A
4	1096	274	538	1081	1052	624	0.0	8.8	21.354	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	627	157	832	627	629	1030	0.7	1.0	4.903	A
2	1084	271	838	1086	1098	621	1.5	1.9	6.256	A
3	1183	296	208	1184	1177	1716	1.3	1.4	4.077	A
4	1279	320	638	1224	1217	755	8.8	24.1	52.740	F

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	780	195	1019	779	774	1072	1.0	1.2	5.417	A
2	1339	335	1038	1334	1341	761	1.9	3.1	8.083	A
3	1443	361	256	1444	1434	2116	1.4	2.1	4.973	A
4	1578	395	779	1312	1310	921	24.1	95.2	174.963	F

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	778	195	998	778	774	1061	1.2	1.2	5.448	A
2	1326	331	1030	1330	1326	746	3.1	3.1	7.721	A
3	1419	355	257	1415	1434	2102	2.1	2.3	4.978	A
4	1598	400	759	1301	1307	913	95.2	165.2	377.569	F

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	632	158	840	630	630	1065	1.2	1.1	4.915	A
2	1084	271	845	1083	1094	626	3.1	2.0	6.065	A
3	1181	295	207	1180	1182	1721	2.3	1.3	4.083	A
4	1307	327	639	1267	1261	749	165.2	173.6	489.588	F

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	535	134	694	535	537	1057	1.1	0.7	4.582	A
2	912	228	711	912	919	517	2.0	1.5	5.365	A
3	985	246	175	986	984	1448	1.3	0.8	3.674	A
4	1075	269	531	1220	1217	630	173.6	139.2	370.137	F

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	225	1034	0.218	225	218	0.0	0.3	4.182	A
			2	1, 3, 4	304	1034	0.294	304	305	0.0	0.5	4.751	A
		2	1	(1, 2, 3, 4)	530			530	526	0.0	0.0	0.032	A
	Exit	1	1		909			909	881	0.0	0.0	0.000	A
2	Entry	1	1	3	458	1001	0.457	459	460	0.0	0.7	5.369	A
			2	1, 2, 3, 4	462	1001	0.461	460	459	0.0	0.8	5.467	A
	Exit	1	1		533			533	516	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	497	1590	0.313	499	500	0.0	0.6	3.797	A
			2	2, 3	498	1590	0.313	494	481	0.0	0.8	3.656	A
	Exit	1	1		1457			1457	1454	0.0	0.0	0.000	A
4	Entry	1	1	1	880	1000	0.880	865	836	0.0	8.5	25.348	D
			2	2, 3, 4	216	1000	0.216	216	217	0.0	0.3	5.366	A
	Exit	1	1		624			624	624	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	253	1008	0.251	254	262	0.3	0.4	4.595	A
			2	1, 3, 4	374	1008	0.371	373	367	0.5	0.6	5.049	A
		2	1	(1, 2, 3, 4)	627			628	630	0.0	0.0	0.043	A
	Exit	1	1		1030			1030	1022	0.0	0.0	0.000	A
2	Entry	1	1	3	546	1000	0.546	547	546	0.7	0.8	6.249	A
			2	1, 2, 3, 4	539	1000	0.539	539	551	0.8	1.0	6.264	A
	Exit	1	1		621			621	619	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	603	1567	0.385	604	600	0.6	0.7	4.091	A
			2	2, 3	580	1567	0.370	580	578	0.8	0.7	4.061	A
	Exit	1	1		1716			1716	1731	0.0	0.0	0.000	A
4	Entry	1	1	1	1026	1000	1.026	972	966	8.5	23.7	64.295	F
			2	2, 3, 4	252	1000	0.252	253	251	0.3	0.4	5.468	A
	Exit	1	1		755			755	749	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	335	1000	0.335	334	331	0.4	0.4	4.900	A
			2	1, 3, 4	445	1000	0.445	445	443	0.6	0.8	5.622	A
		2	1	(1, 2, 3, 4)	780			780	775	0.0	0.0	0.103	A
	Exit	1	1		1072			1072	1068	0.0	0.0	0.000	A
2	Entry	1	1	3	672	1000	0.672	670	672	0.8	1.5	7.952	A
			2	1, 2, 3, 4	666	1000	0.666	664	669	1.0	1.5	8.216	A
	Exit	1	1		761			761	761	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	730	1538	0.475	733	725	0.7	0.9	5.075	A
			2	2, 3	713	1538	0.464	711	709	0.7	1.2	4.869	A
	Exit	1	1		2116			2116	2119	0.0	0.0	0.000	A
4	Entry	1	1	1	1268	1000	1.268	1004	1002	23.7	94.6	215.508	F
			2	2, 3, 4	310	1000	0.310	308	308	0.4	0.6	6.035	A
	Exit	1	1		921			921	911	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	330	1000	0.330	330	327	0.4	0.4	4.973	A
			2	1, 3, 4	448	1000	0.448	448	447	0.8	0.7	5.578	A
		2	1	(1, 2, 3, 4)	778			778	774	0.0	0.0	0.126	A
	Exit	1	1		1061			1061	1064	0.0	0.0	0.000	A
2	Entry	1	1	3	655	1000	0.655	657	657	1.5	1.5	7.773	A
			2	1, 2, 3, 4	671	1000	0.671	672	669	1.5	1.6	7.670	A
	Exit	1	1		746			746	763	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	721	1537	0.469	720	724	0.9	1.1	5.148	A
			2	2, 3	697	1537	0.454	695	709	1.2	1.1	4.803	A
	Exit	1	1		2102			2102	2097	0.0	0.0	0.000	A
4	Entry	1	1	1	1295	1000	1.295	997	999	94.6	164.8	466.720	F
			2	2, 3, 4	303	1000	0.303	303	307	0.6	0.5	5.761	A
	Exit	1	1		913			913	916	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	262	1009	0.259	261	266	0.4	0.4	4.509	A
			2	1, 3, 4	370	1009	0.367	369	365	0.7	0.7	5.167	A
		2	1	(1, 2, 3, 4)	632			632	630	0.0	0.0	0.025	A
	Exit	1	1		1065			1065	1061	0.0	0.0	0.000	A
2	Entry	1	1	3	536	1000	0.536	535	543	1.5	1.1	6.102	A
			2	1, 2, 3, 4	548	1000	0.548	548	551	1.6	0.9	6.029	A
	Exit	1	1		626			626	627	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	598	1568	0.382	597	599	1.1	0.7	4.056	A
			2	2, 3	582	1568	0.371	583	583	1.1	0.6	4.112	A
	Exit	1	1		1721			1721	1731	0.0	0.0	0.000	A
4	Entry	1	1	1	1048	1000	1.048	1009	1006	164.8	173.0	608.443	F
			2	2, 3, 4	260	1000	0.260	257	255	0.5	0.6	5.224	A
	Exit	1	1		749			749	748	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	218	1038	0.210	218	221	0.4	0.3	4.319	A
			2	1, 3, 4	317	1038	0.306	317	316	0.7	0.4	4.728	A
		2	1	(1, 2, 3, 4)	535			535	536	0.0	0.0	0.024	A
	Exit	1	1		1057			1057	1050	0.0	0.0	0.000	A
2	Entry	1	1	3	451	1002	0.450	451	454	1.1	0.7	5.377	A
			2	1, 2, 3, 4	461	1002	0.460	461	465	0.9	0.8	5.353	A
	Exit	1	1		517			517	521	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	504	1587	0.317	504	500	0.7	0.4	3.682	A
			2	2, 3	481	1587	0.303	482	484	0.6	0.4	3.666	A
	Exit	1	1		1448			1448	1459	0.0	0.0	0.000	A
4	Entry	1	1	1	863	1000	0.863	1009	1004	173.0	138.9	535.809	F
			2	2, 3, 4	213	1000	0.213	211	213	0.6	0.3	4.988	A
	Exit	1	1		630			630	626	0.0	0.0	0.000	A

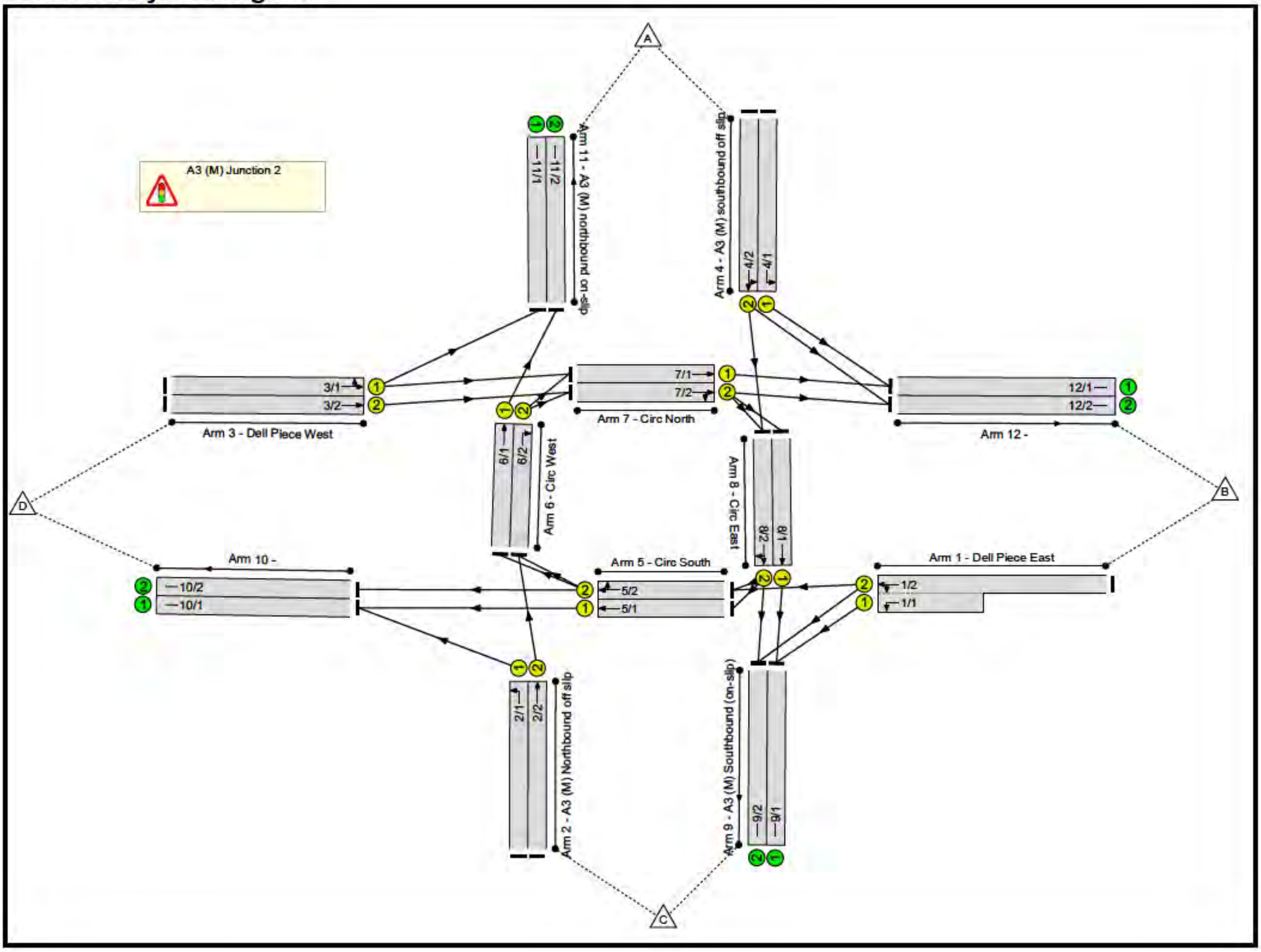
Appendix 7 – LINSIG Outputs

Full Input Data And Results

User and Project Details

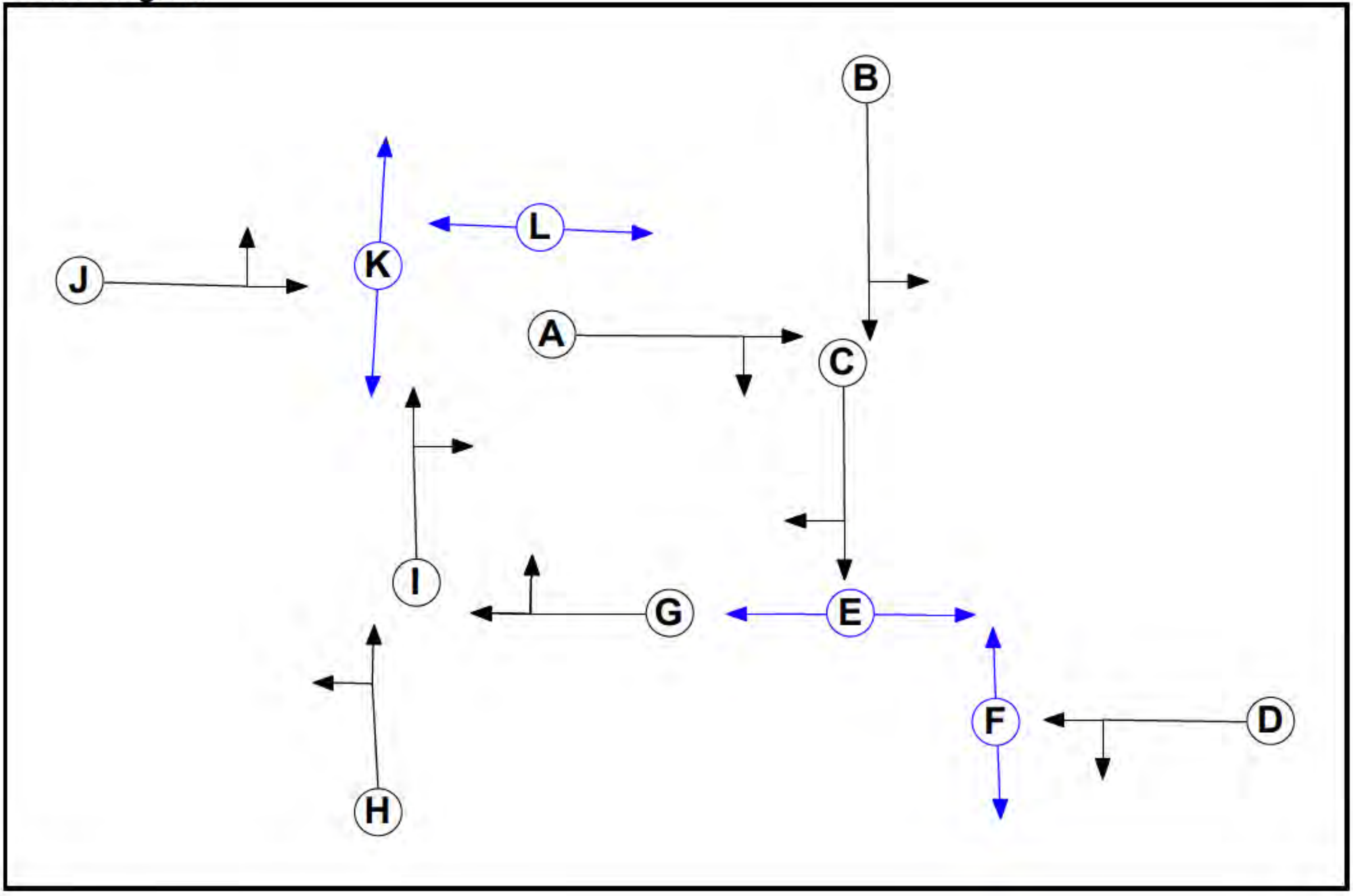
Project:	
Title:	
Location:	
Additional detail:	
File name:	A3 (M) Junction 2.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		6	2
D	Traffic	2		6	2
E	Pedestrian	2		6	6
F	Pedestrian	2		6	6
G	Traffic	3		7	7
H	Traffic	3		7	7
I	Traffic	4		6	2
J	Traffic	4		6	2
K	Pedestrian	4		6	6
L	Pedestrian	4		6	6

Full Input Data And Results

Phase Intergreens Matrix

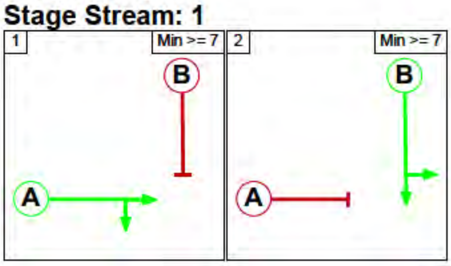
	Starting Phase											
Terminating Phase		A	B	C	D	E	F	G	H	I	J	K	L
	A		6	-	-	-	-	-	-	-	-	-	-
	B	6		-	-	-	-	-	-	-	-	-	-
	C	-	-		6	6	-	-	-	-	-	-	-
	D	-	-	6		-	6	-	-	-	-	-	-
	E	-	-	10	-		-	-	-	-	-	-	-
	F	-	-	-	10	-		-	-	-	-	-	-
	G	-	-	-	-	-	-		6	-	-	-	-
	H	-	-	-	-	-	-	6		-	-	-	-
	I	-	-	-	-	-	-	-	-		6	-	6
	J	-	-	-	-	-	-	-	-	6		6	-
	K	-	-	-	-	-	-	-	-	-	10		-
	L	-	-	-	-	-	-	-	-	10	-	-	

Phases in Stage

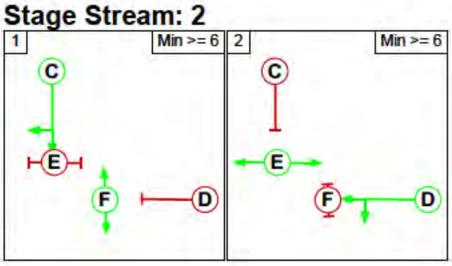
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C F
2	2	D E
3	1	G
3	2	H
4	1	I K
4	2	J L

Stage Diagram

Stage Stream: 1

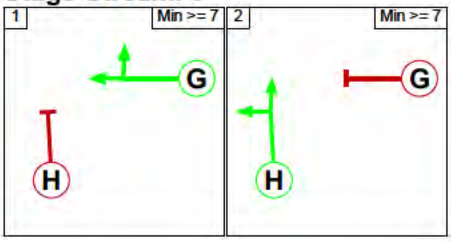


Stage Stream: 2

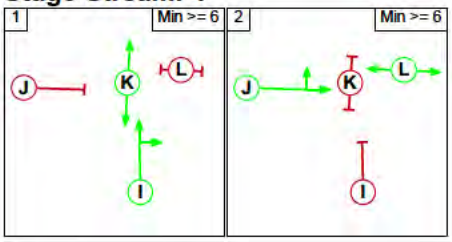


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	4	4
2	1	D	Losing	4	4

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	I	Losing	4	4
2	1	J	Losing	4	4

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		6
	2	6	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		10
	2	10	

Full Input Data And Results

Stage Stream: 3

		To Stage	
		1	2
From Stage	1		6
	2	6	

Stage Stream: 4

		To Stage	
		1	2
From Stage	1		10
	2	10	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A3 (M) Junction 2
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: A3 (M) Junction 2													
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Dell Piece East)	U	D	2	3	8.7	User	1900	-	-	-	-	-
1/2 (Dell Piece East)	U	D	2	3	60.0	User	1900	-	-	-	-	-
2/1 (A3 (M) Northbound off slip)	U	H	2	3	60.0	User	1800	-	-	-	-	-
2/2 (A3 (M) Northbound off slip)	U	H	2	3	60.0	User	1800	-	-	-	-	-
3/1 (Dell Piece West)	U	J	2	3	60.0	User	1800	-	-	-	-	-
3/2 (Dell Piece West)	U	J	2	3	60.0	User	1800	-	-	-	-	-
4/1 (A3 (M) southbound off slip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/2 (A3 (M) southbound off slip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
5/1 (Circ South)	U	G	2	3	15.7	User	1900	-	-	-	-	-
5/2 (Circ South)	U	G	2	3	15.7	User	1900	-	-	-	-	-
6/1 (Circ West)	U	I	2	3	7.0	User	1800	-	-	-	-	-
6/2 (Circ West)	U	I	2	3	7.0	User	1800	-	-	-	-	-
7/1 (Circ North)	U	A	2	3	15.7	User	1800	-	-	-	-	-
7/2 (Circ North)	U	A	2	3	15.7	User	1800	-	-	-	-	-
8/1 (Circ East)	U	C	2	3	7.0	User	1900	-	-	-	-	-
8/2 (Circ East)	U	C	2	3	7.0	User	1900	-	-	-	-	-
9/1 (A3 (M) Southbound (on-slip))	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A3 (M) Southbound (on-slip))	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-

10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A3 (M) northbound on-slip)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A3 (M) northbound on-slip)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'DM AM'	08:00	09:00	01:00	
2: 'DM PM'	17:00	18:00	01:00	
3: 'DS1 AM'	08:00	09:00	01:00	
4: 'DS1 PM'	17:00	18:00	01:00	
5: 'DS2 AM'	08:00	09:00	01:00	
6: 'DS2 PM'	17:00	18:00	01:00	

Scenario 1: 'DM AM' (FG1: 'DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	162	0	788	950
	B	2	0	880	21	903
	C	0	459	0	393	852
	D	597	145	560	0	1302
	Tot.	599	766	1440	1202	4007

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: DM AM
Junction: A3 (M) Junction 2	
1/1 (short)	45
1/2 (with short)	903(In) 858(Out)
2/1	393
2/2	459
3/1	687
3/2	615
4/1	162
4/2	788
5/1	410
5/2	401
6/1	2
6/2	459
7/1	549
7/2	615
8/1	560
8/2	788
9/1	605
9/2	835
10/1	803
10/2	399
11/1	597
11/2	2
12/1	711
12/2	55

Full Input Data And Results

Lane Saturation Flows

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
Junction: A3 (M) Junction 2								
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: 'DM PM' (FG2: 'DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	72	0	434	506
	B	0	0	740	23	763
	C	0	631	0	468	1099
	D	405	121	1019	0	1545
	Tot.	405	824	1759	925	3913

Traffic Lane Flows

Lane	Scenario 2: DM PM
Junction: A3 (M) Junction 2	
1/1 (short)	0
1/2 (with short)	763(In) 763(Out)
2/1	468
2/2	631
3/1	526
3/2	1019
4/1	72
4/2	434
5/1	232
5/2	225
6/1	0
6/2	631
7/1	752
7/2	1019
8/1	734
8/2	719
9/1	734
9/2	1025
10/1	700
10/2	225
11/1	405
11/2	0
12/1	824
12/2	0

Full Input Data And Results

Lane Saturation Flows

Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: 'DS1 AM' (FG3: 'DS1 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	146	0	796	942
	B	2	0	847	16	865
	C	0	458	0	418	876
	D	551	151	605	0	1307
	Tot.	553	755	1452	1230	3990

Traffic Lane Flows

Lane	Scenario 3: DS1 AM
Junction: A3 (M) Junction 2	
1/1 (short)	72
1/2 (with short)	865(In) 793(Out)
2/1	418
2/2	458
3/1	702
3/2	605
4/1	146
4/2	796
5/1	410
5/2	404
6/1	2
6/2	458
7/1	609
7/2	605
8/1	605
8/2	796
9/1	677
9/2	775
10/1	828
10/2	402
11/1	551
11/2	2
12/1	755
12/2	0

Lane Saturation Flows

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
Junction: A3 (M) Junction 2								
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 4: 'DS1 PM' (FG4: 'DS1 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	80	0	398	478
	B	0	0	739	6	745
	C	0	600	0	657	1257
	D	445	127	1044	0	1616
	Tot.	445	807	1783	1061	4096

Traffic Lane Flows

Lane	Scenario 4: DS1 PM
Junction: A3 (M) Junction 2	
1/1 (short)	0
1/2 (with short)	745(In) 745(Out)
2/1	657
2/2	600
3/1	572
3/2	1044
4/1	80
4/2	398
5/1	203
5/2	201
6/1	0
6/2	600
7/1	727
7/2	1044
8/1	720
8/2	722
9/1	720
9/2	1063
10/1	860
10/2	201
11/1	445
11/2	0
12/1	807
12/2	0

Full Input Data And Results

Lane Saturation Flows

Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 5: 'DS2 AM' (FG5: 'DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	145	0	796	941
	B	2	0	846	16	864
	C	0	457	0	417	874
	D	549	152	606	0	1307
	Tot.	551	754	1452	1229	3986

Traffic Lane Flows

Lane	Scenario 5: DS2 AM
Junction: A3 (M) Junction 2	
1/1 (short)	72
1/2 (with short)	864(In) 792(Out)
2/1	417
2/2	457
3/1	701
3/2	606
4/1	145
4/2	796
5/1	410
5/2	404
6/1	2
6/2	457
7/1	609
7/2	606
8/1	606
8/2	796
9/1	678
9/2	774
10/1	827
10/2	402
11/1	549
11/2	2
12/1	754
12/2	0

Full Input Data And Results

Lane Saturation Flows

Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 6: 'DS2 PM' (FG6: 'DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	80	0	400	480
	B	0	0	738	6	744
	C	0	601	0	653	1254
	D	446	126	1044	0	1616
	Tot.	446	807	1782	1059	4094

Traffic Lane Flows

Lane	Scenario 6: DS2 PM
Junction: A3 (M) Junction 2	
1/1 (short)	0
1/2 (with short)	744(In) 744(Out)
2/1	653
2/2	601
3/1	572
3/2	1044
4/1	80
4/2	400
5/1	204
5/2	202
6/1	0
6/2	601
7/1	727
7/2	1044
8/1	722
8/2	722
9/1	722
9/2	1060
10/1	857
10/2	202
11/1	446
11/2	0
12/1	807
12/2	0

Lane Saturation Flows

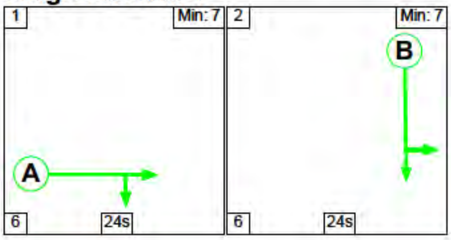
Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

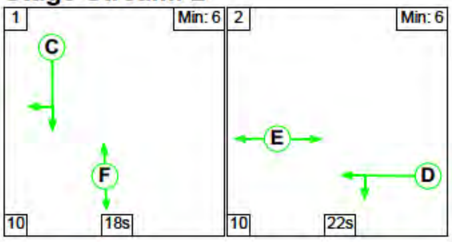
Scenario 1: 'DM AM' (FG1: 'DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

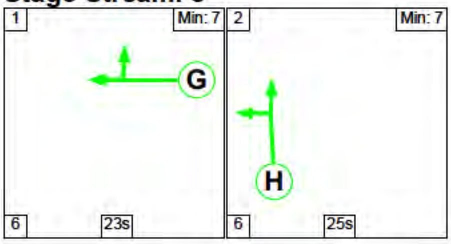
Stage Stream: 1



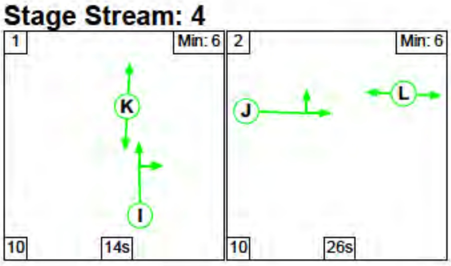
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	24
Change Point	15	45

Stage Stream: 2

Stage	1	2
Duration	18	22
Change Point	51	19

Stage Stream: 3

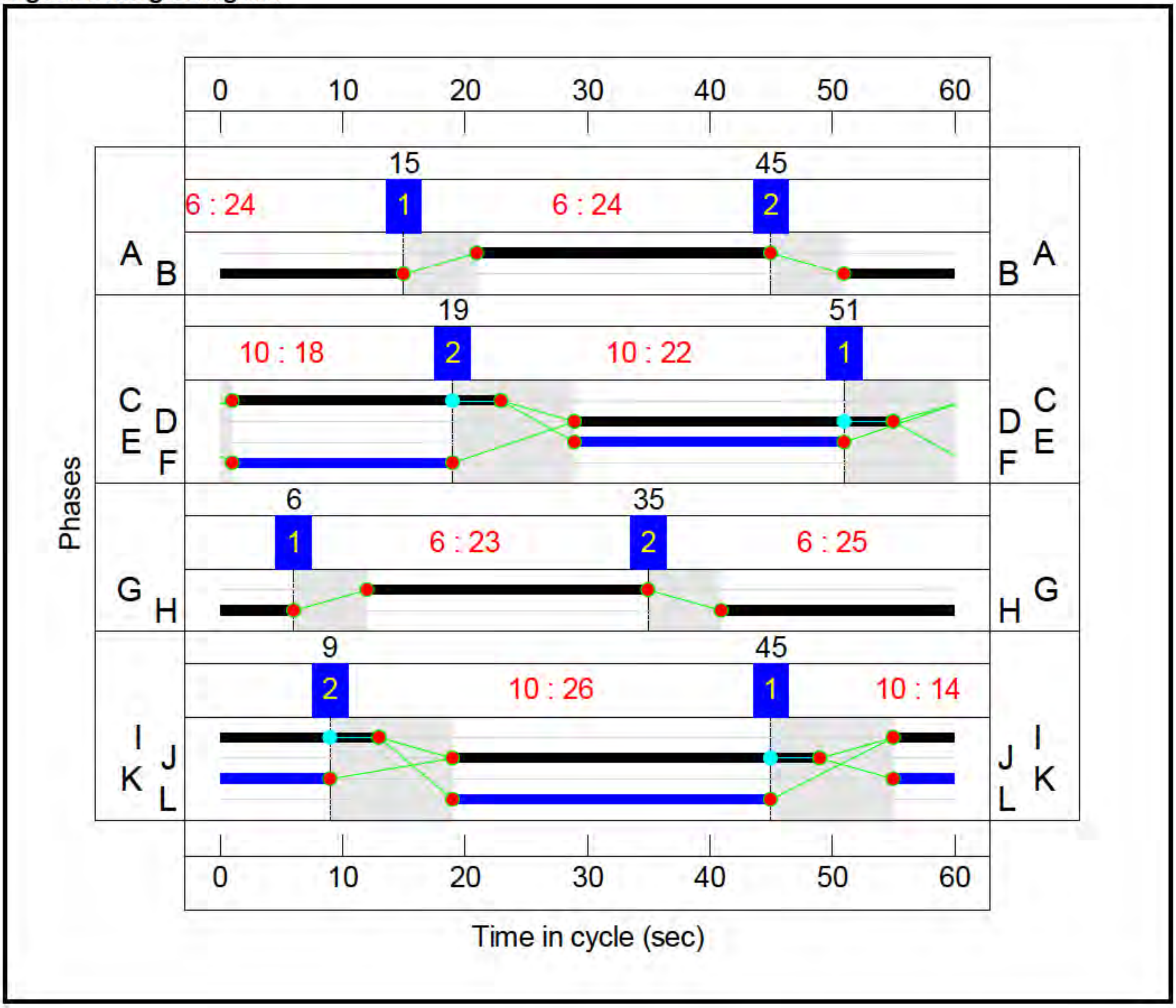
Stage	1	2
Duration	23	25
Change Point	6	35

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	14	26
Change Point	45	9

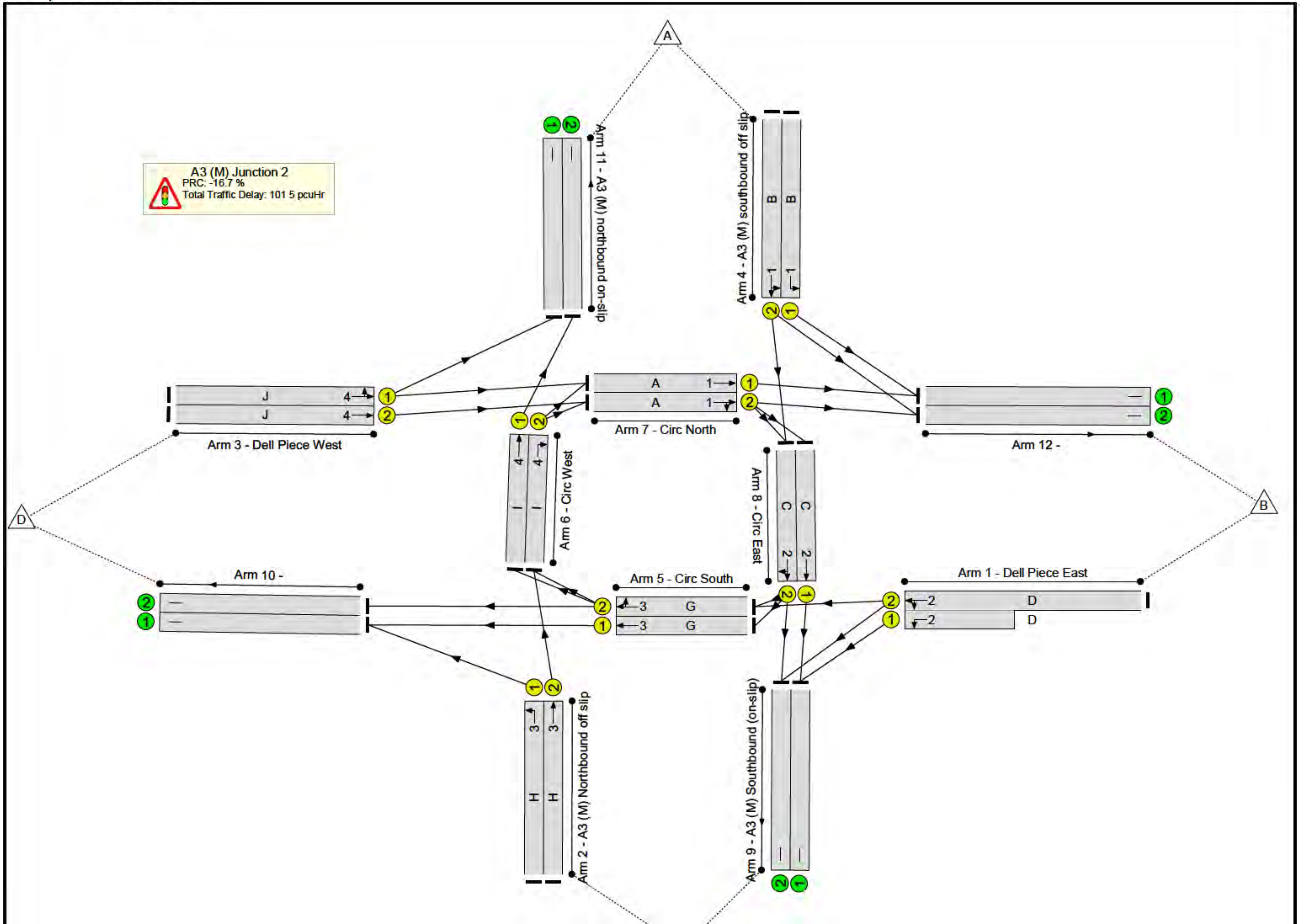
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.1%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.1%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	26	-	903	1900:1900	855+45	100.4 : 100.4%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	25	-	393	1800	780	50.4%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	25	-	459	1800	780	58.8%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	30	-	687	1800	930	73.9%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	30	-	615	1800	930	66.1%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	24	-	162	1800	750	21.6%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	24	-	788	1800	750	105.1%
5/1	Circ South Ahead	U	3	N/A	G		1	23	-	410	1900	760	49.9%
5/2	Circ South Right Ahead	U	3	N/A	G		1	23	-	401	1900	760	49.0%
6/1	Circ West Ahead	U	4	N/A	I		1	18	-	2	1800	570	0.3%
6/2	Circ West Right	U	4	N/A	I		1	18	-	459	1800	570	80.5%
7/1	Circ North Ahead	U	1	N/A	A		1	24	-	549	1800	750	73.2%
7/2	Circ North Right Ahead	U	1	N/A	A		1	24	-	615	1800	750	82.0%
8/1	Circ East Ahead	U	2	N/A	C		1	22	-	560	1900	728	76.9%
8/2	Circ East Right Ahead	U	2	N/A	C		1	22	-	788	1900	728	103.0%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	605	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	835	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	803	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	597	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	55	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**27.2**	**74.3**	**0.0**	**101.5**	-	-	-	-
A3 (M) Junction 2	-	-	**0**	**0**	**0**	**27.2**	**74.3**	**0.0**	**101.5**	-	-	-	-
1/2+1/1	903	900	-	-	-	4.1	15.8	-	20.0	79.6	14.4	15.8	30.2
2/1	393	393	-	-	-	1.3	0.5	-	1.9	17.0	4.7	0.5	5.2
2/2	459	459	-	-	-	1.6	0.7	-	2.4	18.5	5.7	0.7	6.4
3/1	687	687	-	-	-	2.2	1.4	-	3.6	18.7	8.8	1.4	10.2
3/2	615	615	-	-	-	1.8	1.0	-	2.8	16.3	7.5	1.0	8.5
4/1	162	162	-	-	-	0.5	0.1	-	0.6	14.3	1.7	0.1	1.8
4/2	788	750	-	-	-	5.0	26.4	-	31.5	143.9	13.8	26.4	40.2
5/1	379	379	-	-	-	0.1	0.5	-	0.6	6.0	0.8	0.5	1.3
5/2	372	372	-	-	-	0.3	0.5	-	0.7	7.2	1.3	0.5	1.8
6/1	2	2	-	-	-	0.0	0.0	-	0.0	35.2	0.0	0.0	0.0
6/2	459	459	-	-	-	0.8	2.0	-	2.8	21.7	6.8	2.0	8.8
7/1	549	549	-	-	-	2.3	1.3	-	3.6	23.8	8.6	1.3	10.0
7/2	615	615	-	-	-	1.4	2.2	-	3.6	21.2	2.8	2.2	5.0
8/1	560	560	-	-	-	4.0	1.6	-	5.6	36.2	9.3	1.6	11.0
8/2	750	728	-	-	-	1.7	20.1	-	21.8	104.7	12.9	20.1	33.0
9/1	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	772	772	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	597	597	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	55	55	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

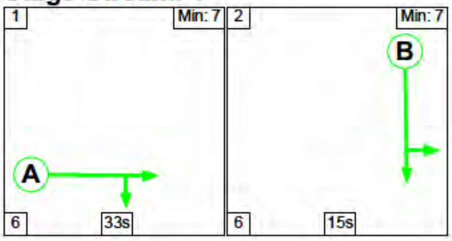
C1	Stream: 1	PRC for Signalled Lanes (%):	-16.7	Total Delay for Signalled Lanes (pcuHr):	39.40	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-14.4	Total Delay for Signalled Lanes (pcuHr):	47.41	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	52.9	Total Delay for Signalled Lanes (pcuHr):	5.59	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	11.8	Total Delay for Signalled Lanes (pcuHr):	9.13	Cycle Time (s):	60
		PRC Over All Lanes (%):	-16.7	Total Delay Over All Lanes(pcuHr):	101.53		

Full Input Data And Results

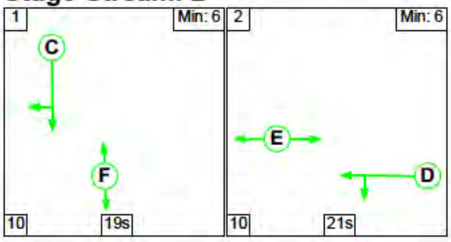
Scenario 2: 'DM PM' (FG2: 'DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

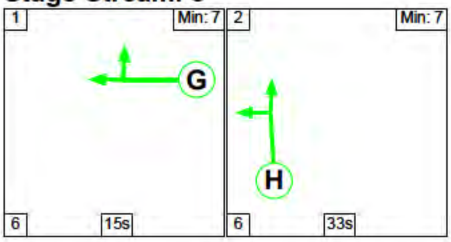
Stage Stream: 1



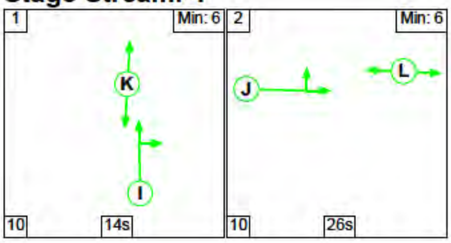
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	33	15
Change Point	40	19

Stage Stream: 2

Stage	1	2
Duration	19	21
Change Point	16	45

Stage Stream: 3

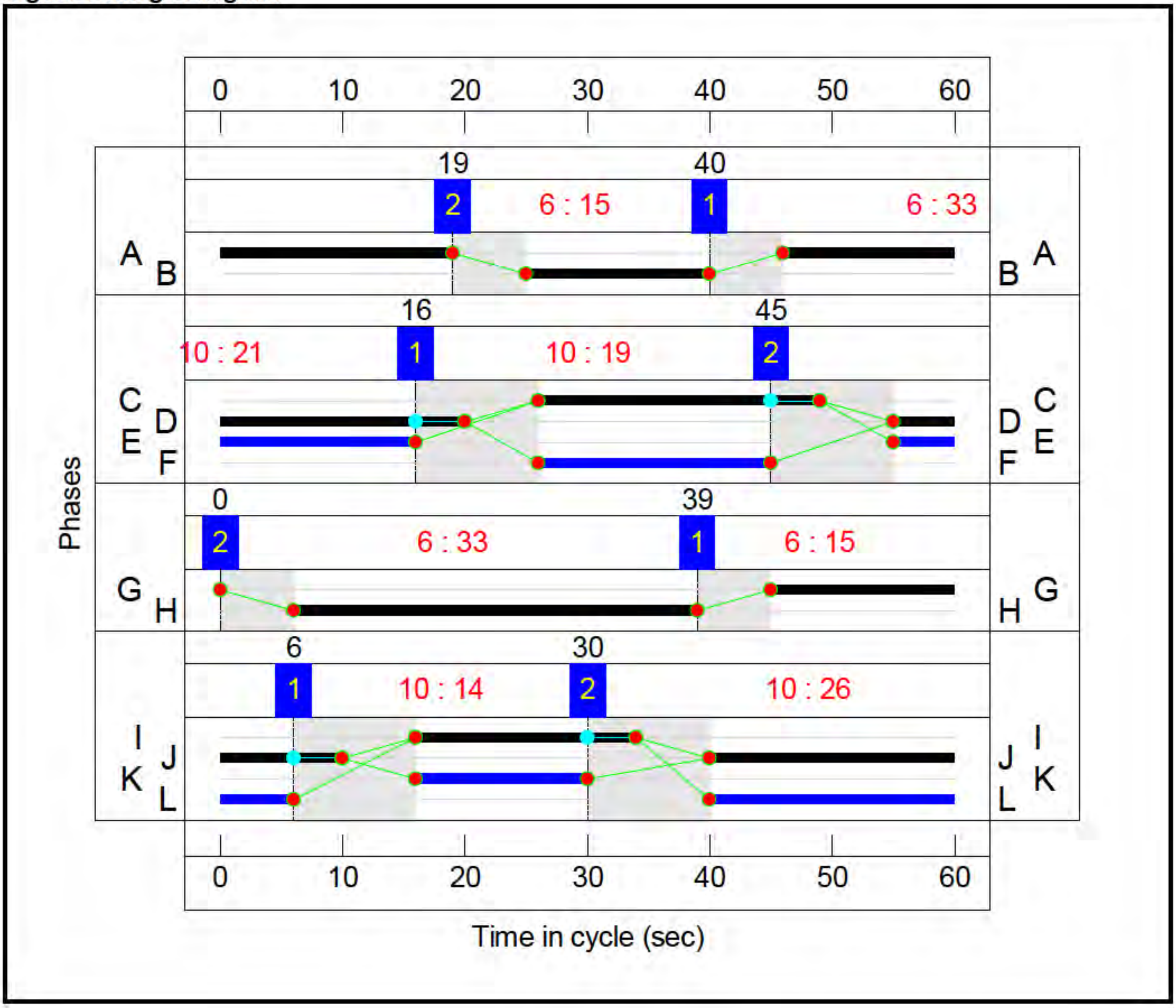
Stage	1	2
Duration	15	33
Change Point	39	0

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	14	26
Change Point	6	30

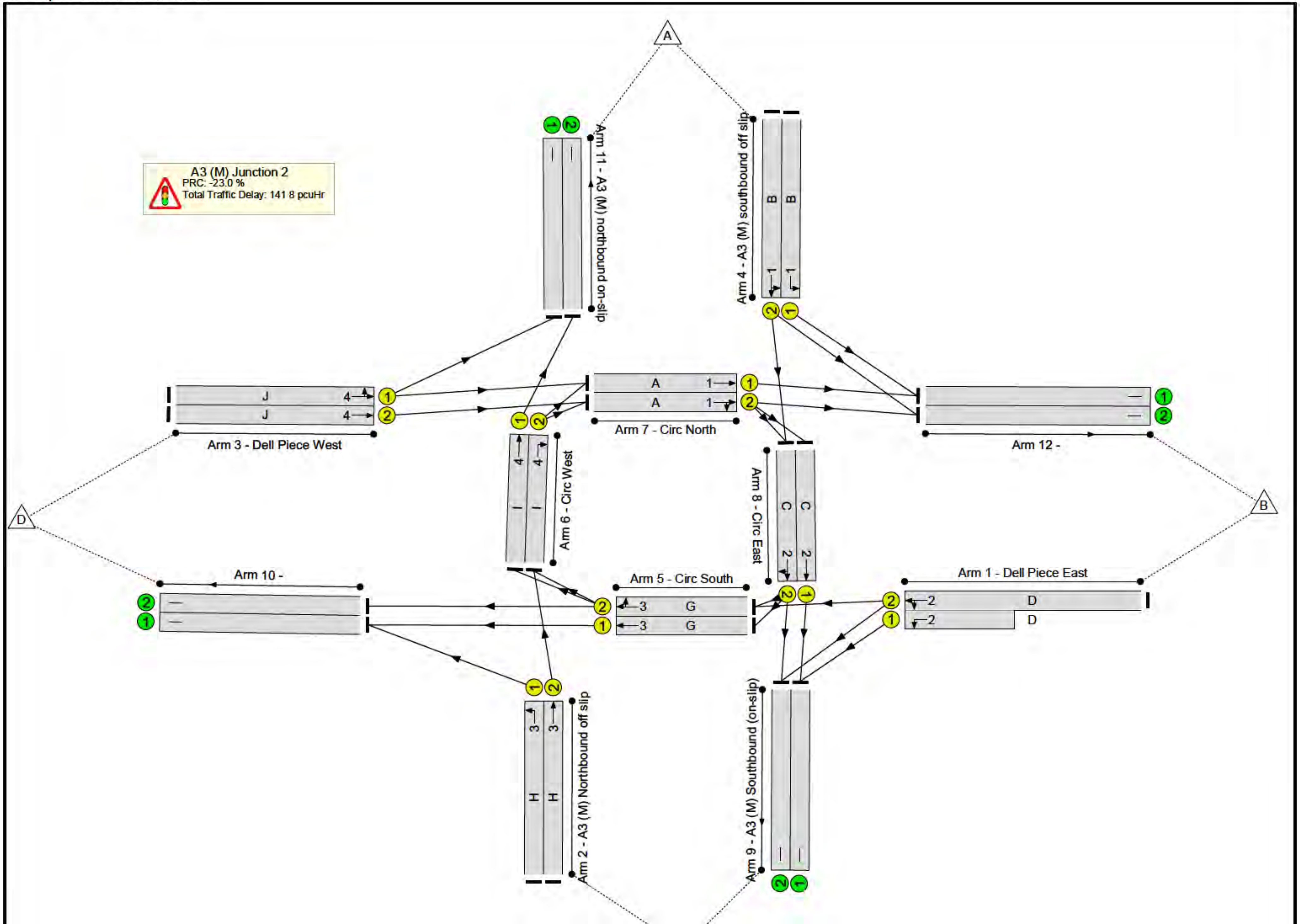
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.7%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.7%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	25	-	763	1900:1900	823+0	92.7 : 0.0%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	33	-	468	1800	1020	45.9%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	33	-	631	1800	1020	61.9%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	30	-	526	1800	930	56.6%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	30	-	1019	1800	930	109.6%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	15	-	72	1800	480	15.0%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	15	-	434	1800	480	90.4%
5/1	Circ South Ahead	U	3	N/A	G		1	15	-	232	1900	507	45.8%
5/2	Circ South Right Ahead	U	3	N/A	G		1	15	-	225	1900	507	44.4%
6/1	Circ West Ahead	U	4	N/A	I		1	18	-	0	1800	570	0.0%
6/2	Circ West Right	U	4	N/A	I		1	18	-	631	1800	570	110.7%
7/1	Circ North Ahead	U	1	N/A	A		1	33	-	752	1800	1020	67.7%
7/2	Circ North Right Ahead	U	1	N/A	A		1	33	-	1019	1800	1020	91.2%
8/1	Circ East Ahead	U	2	N/A	C		1	23	-	734	1900	760	88.1%
8/2	Circ East Right Ahead	U	2	N/A	C		1	23	-	719	1900	760	91.3%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	734	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	1025	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	700	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	824	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**31.1**	**110.6**	**0.0**	**141.8**	**-**	**-**	**-**	**-**
A3 (M) Junction 2	**-**	**-**	**0**	**0**	**0**	**31.1**	**110.6**	**0.0**	**141.8**	**-**	**-**	**-**	**-**
1/2+1/1	763	763	-	-	-	3.4	5.4	-	8.8	41.4	11.9	5.4	17.2
2/1	468	468	-	-	-	1.0	0.4	-	1.4	10.9	4.5	0.4	5.0
2/2	631	631	-	-	-	1.5	0.8	-	2.3	13.3	7.0	0.8	7.8
3/1	526	526	-	-	-	1.4	0.6	-	2.1	14.3	5.8	0.6	6.5
3/2	1019	930	-	-	-	7.1	49.6	-	56.8	200.6	18.5	49.6	68.1
4/1	72	72	-	-	-	0.3	0.1	-	0.4	21.2	0.9	0.1	1.0
4/2	434	434	-	-	-	2.6	4.0	-	6.6	54.6	6.9	4.0	10.9
5/1	232	232	-	-	-	0.2	0.4	-	0.6	9.8	0.9	0.4	1.3
5/2	225	225	-	-	-	0.4	0.4	-	0.8	12.2	1.3	0.4	1.7
6/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	631	570	-	-	-	3.8	35.0	-	38.8	221.1	11.5	35.0	46.5
7/1	691	691	-	-	-	3.3	1.0	-	4.4	22.8	11.1	1.0	12.1
7/2	930	930	-	-	-	0.4	4.7	-	5.1	19.7	1.0	4.7	5.7
8/1	670	670	-	-	-	4.1	3.5	-	7.5	40.5	11.2	3.5	14.6
8/2	694	694	-	-	-	1.6	4.6	-	6.2	32.2	6.4	4.6	11.0
9/1	670	670	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1000	1000	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	700	700	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	763	763	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

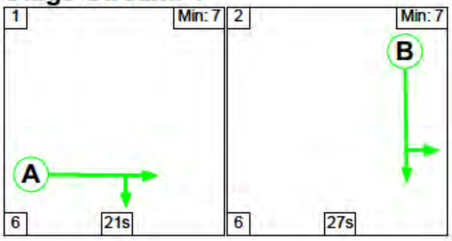
C1	Stream: 1	PRC for Signalled Lanes (%):	-1.3	Total Delay for Signalled Lanes (pcuHr):	16.46	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-3.0	Total Delay for Signalled Lanes (pcuHr):	22.52	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	45.5	Total Delay for Signalled Lanes (pcuHr):	5.14	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	-23.0	Total Delay for Signalled Lanes (pcuHr):	97.63	Cycle Time (s):	60
		PRC Over All Lanes (%):	-23.0	Total Delay Over All Lanes(pcuHr):	141.75		

Full Input Data And Results

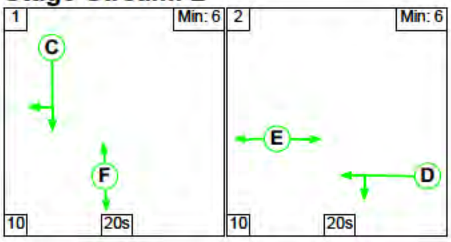
Scenario 3: 'DS1 AM' (FG3: 'DS1 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

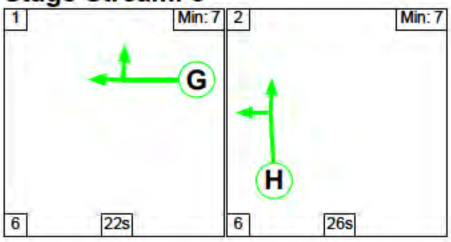
Stage Stream: 1



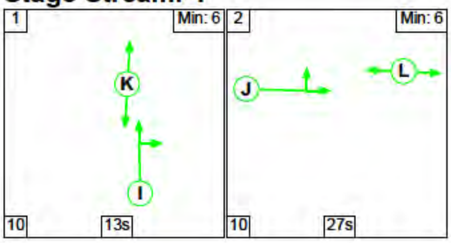
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	27
Change Point	0	27

Stage Stream: 2

Stage	1	2
Duration	20	20
Change Point	33	3

Stage Stream: 3

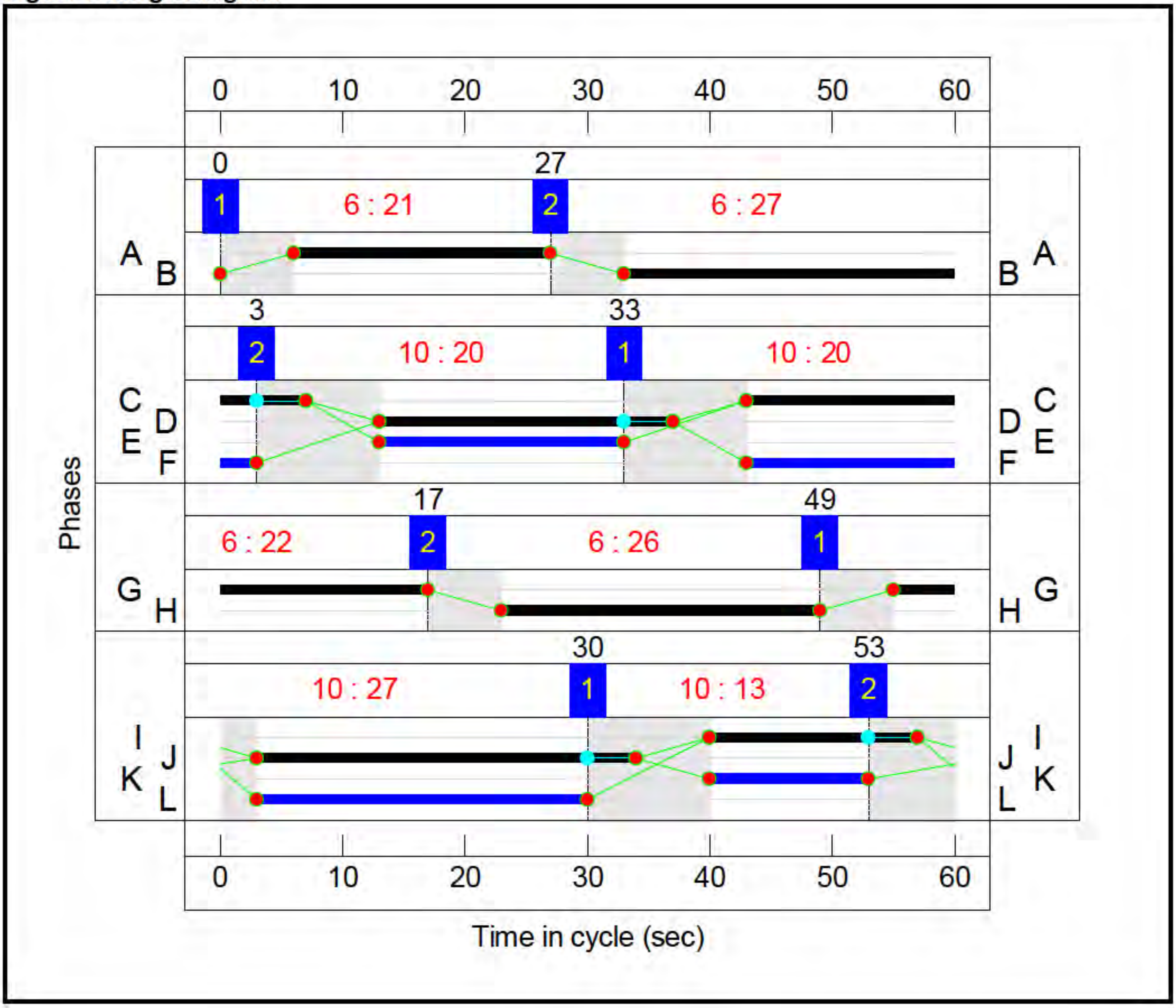
Stage	1	2
Duration	22	26
Change Point	49	17

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	13	27
Change Point	30	53

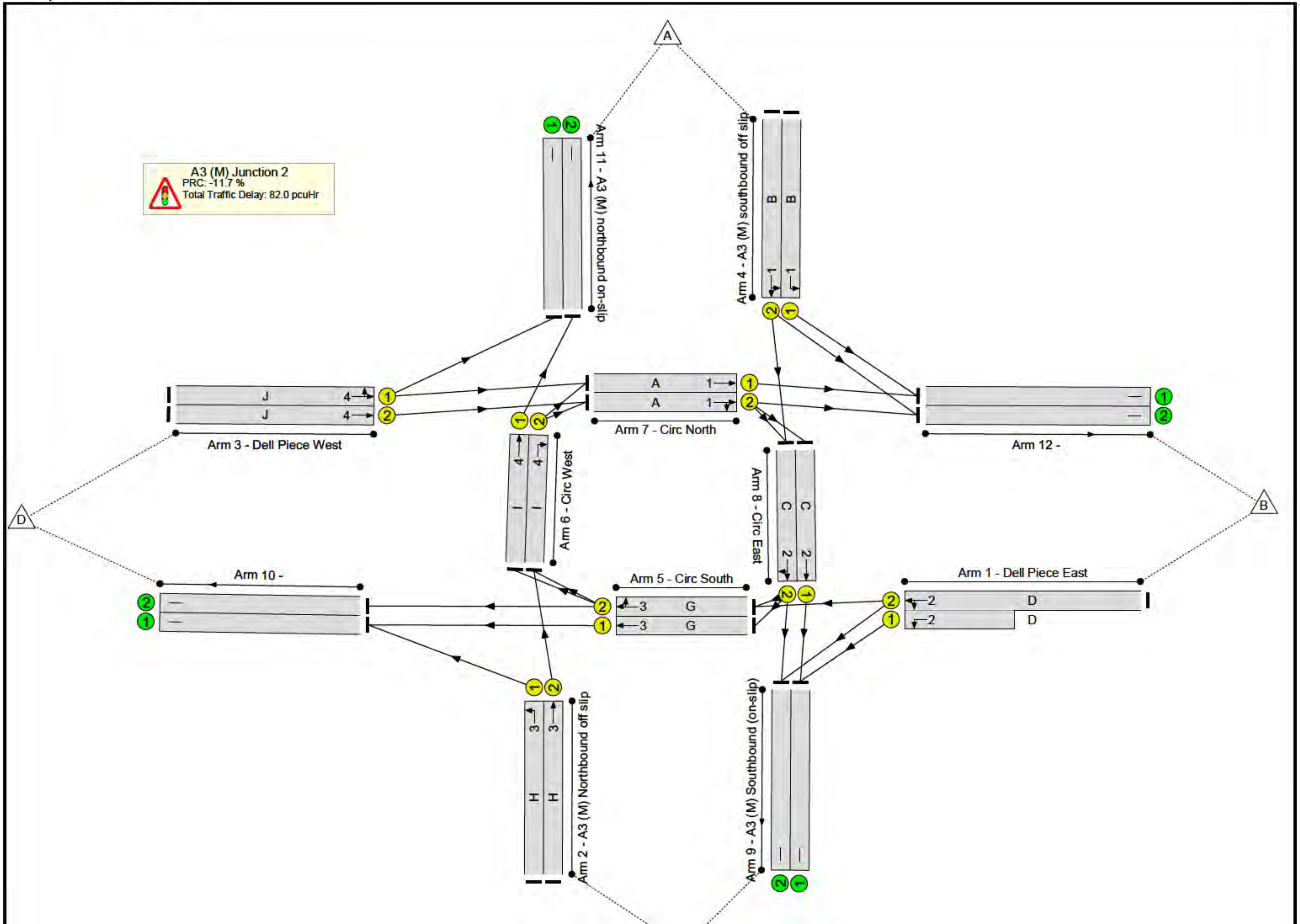
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.5%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.5%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	24	-	865	1900:1900	792+72	100.2 : 100.2%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	26	-	418	1800	810	51.6%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	26	-	458	1800	810	56.5%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	31	-	702	1800	960	73.1%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	31	-	605	1800	960	63.0%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	27	-	146	1800	840	17.4%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	27	-	796	1800	840	94.8%
5/1	Circ South Ahead	U	3	N/A	G		1	22	-	410	1900	728	56.0%
5/2	Circ South Right Ahead	U	3	N/A	G		1	22	-	404	1900	728	55.2%
6/1	Circ West Ahead	U	4	N/A	I		1	17	-	2	1800	540	0.4%
6/2	Circ West Right	U	4	N/A	I		1	17	-	458	1800	540	84.8%
7/1	Circ North Ahead	U	1	N/A	A		1	21	-	609	1800	660	92.3%
7/2	Circ North Right Ahead	U	1	N/A	A		1	21	-	605	1800	660	91.7%
8/1	Circ East Ahead	U	2	N/A	C		1	24	-	605	1900	792	76.4%
8/2	Circ East Right Ahead	U	2	N/A	C		1	24	-	796	1900	792	100.5%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	677	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	775	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	828	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	402	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	551	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	755	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.2**	**55.8**	**0.0**	**82.0**	**-**	**-**	**-**	**-**
A3 (M) Junction 2	**-**	**-**	**0**	**0**	**0**	**26.2**	**55.8**	**0.0**	**82.0**	**-**	**-**	**-**	**-**
1/2+1/1	865	864	-	-	-	4.1	15.1	-	19.2	80.0	13.7	15.1	28.7
2/1	418	418	-	-	-	1.4	0.5	-	1.9	16.4	4.9	0.5	5.4
2/2	458	458	-	-	-	1.5	0.6	-	2.2	17.3	5.6	0.6	6.2
3/1	702	702	-	-	-	2.1	1.3	-	3.4	17.6	8.8	1.3	10.1
3/2	605	605	-	-	-	1.7	0.8	-	2.5	14.9	7.1	0.8	7.9
4/1	146	146	-	-	-	0.4	0.1	-	0.5	11.9	1.4	0.1	1.5
4/2	796	796	-	-	-	3.4	6.9	-	10.3	46.5	12.6	6.9	19.5
5/1	408	408	-	-	-	0.3	0.6	-	0.9	8.0	1.6	0.6	2.3
5/2	402	402	-	-	-	0.4	0.6	-	1.0	8.8	1.8	0.6	2.5
6/1	2	2	-	-	-	0.0	0.0	-	0.0	37.0	0.0	0.0	0.0
6/2	458	458	-	-	-	1.0	2.6	-	3.6	28.2	7.1	2.6	9.7
7/1	609	609	-	-	-	2.8	5.0	-	7.8	46.1	9.8	5.0	14.8
7/2	605	605	-	-	-	1.9	4.7	-	6.6	39.0	4.0	4.7	8.7
8/1	605	605	-	-	-	4.2	1.6	-	5.8	34.6	10.1	1.6	11.7
8/2	796	792	-	-	-	1.1	15.2	-	16.3	73.9	13.3	15.2	28.6
9/1	677	677	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	774	774	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	826	826	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	551	551	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	755	755	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

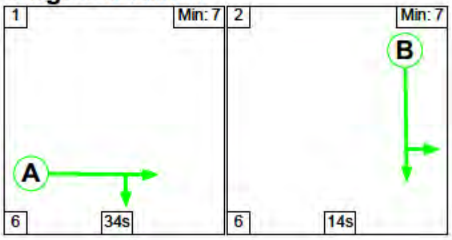
C1	Stream: 1 PRC for Signalled Lanes (%):	-5.3	Total Delay for Signalled Lanes (pcuHr):	25.10	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	-11.7	Total Delay for Signalled Lanes (pcuHr):	41.38	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	59.2	Total Delay for Signalled Lanes (pcuHr):	5.99	Cycle Time (s):	60
C1	Stream: 4 PRC for Signalled Lanes (%):	6.1	Total Delay for Signalled Lanes (pcuHr):	9.55	Cycle Time (s):	60
	PRC Over All Lanes (%):	-11.7	Total Delay Over All Lanes(pcuHr):	82.02		

Full Input Data And Results

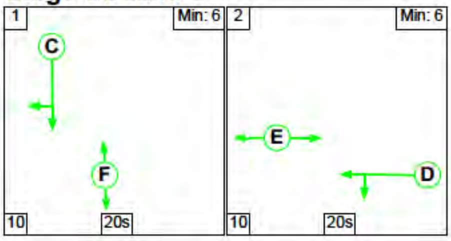
Scenario 4: 'DS1 PM' (FG4: 'DS1 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

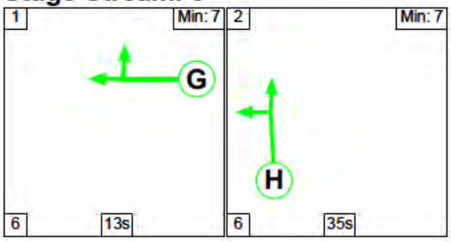
Stage Stream: 1



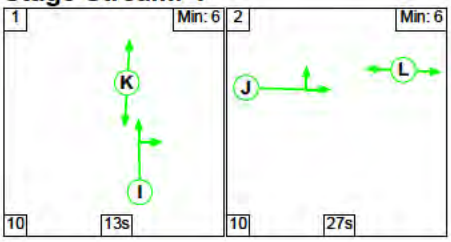
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	34	14
Change Point	0	40

Stage Stream: 2

Stage	1	2
Duration	20	20
Change Point	34	4

Stage Stream: 3

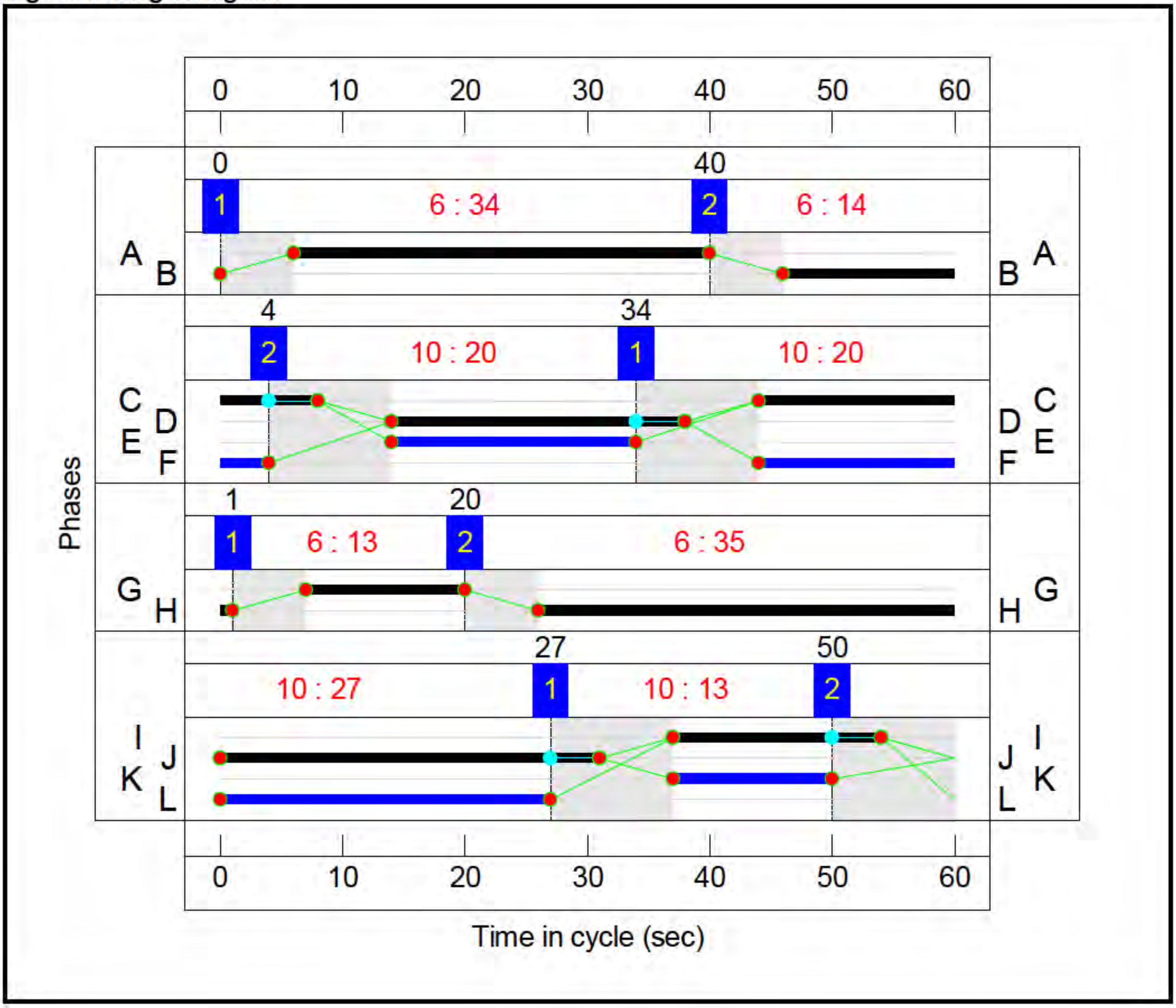
Stage	1	2
Duration	13	35
Change Point	1	20

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	13	27
Change Point	27	50

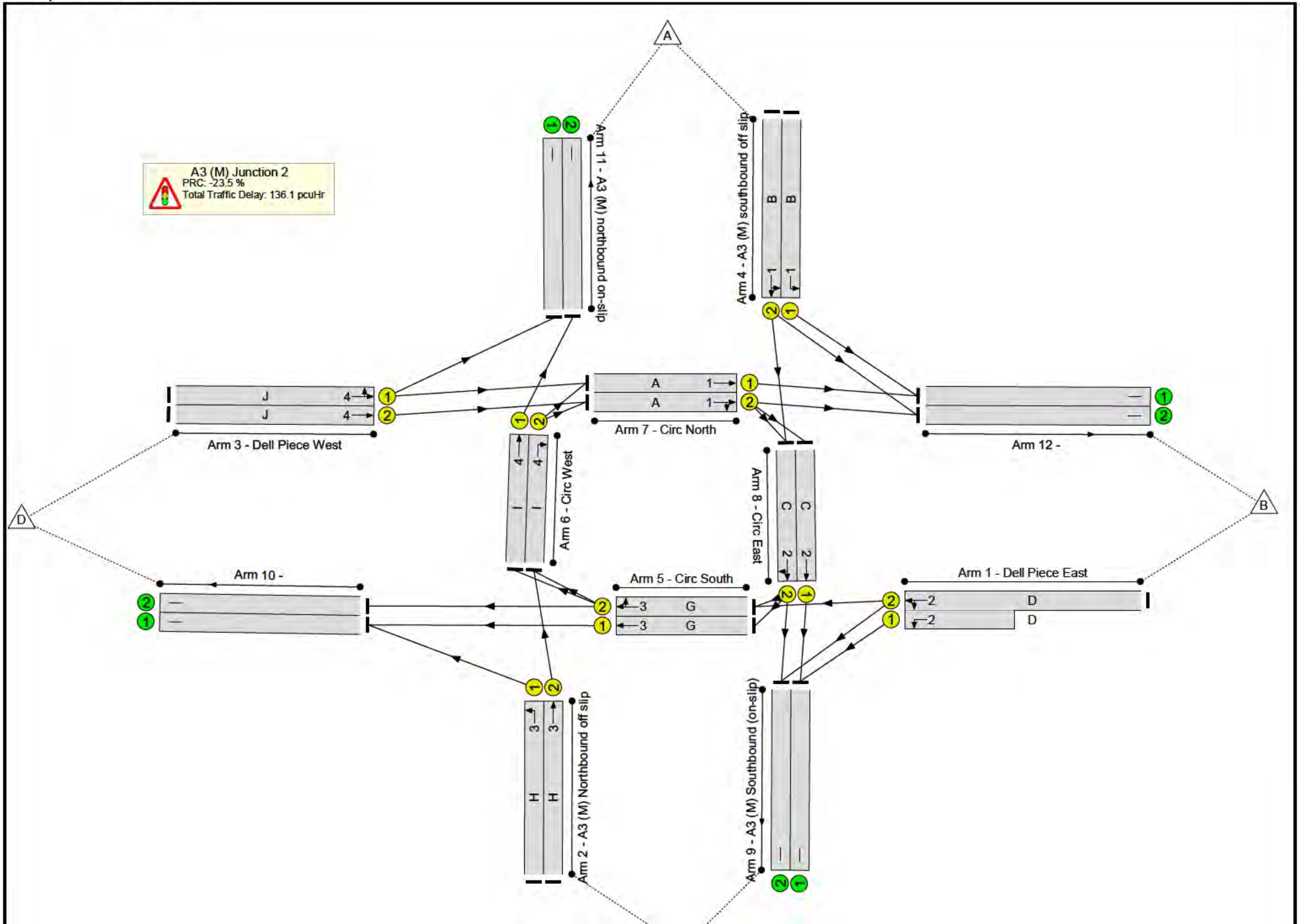
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.1%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.1%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	24	-	745	1900:1900	792+0	94.1 : 0.0%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	35	-	657	1800	1080	60.8%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	35	-	600	1800	1080	55.6%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	31	-	572	1800	960	59.6%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	31	-	1044	1800	960	108.8%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	14	-	80	1800	450	17.8%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	14	-	398	1800	450	88.4%
5/1	Circ South Ahead	U	3	N/A	G		1	13	-	203	1900	443	45.8%
5/2	Circ South Right Ahead	U	3	N/A	G		1	13	-	201	1900	443	45.3%
6/1	Circ West Ahead	U	4	N/A	I		1	17	-	0	1800	540	0.0%
6/2	Circ West Right	U	4	N/A	I		1	17	-	600	1800	540	111.1%
7/1	Circ North Ahead	U	1	N/A	A		1	34	-	727	1800	1050	63.5%
7/2	Circ North Right Ahead	U	1	N/A	A		1	34	-	1044	1800	1050	91.4%
8/1	Circ East Ahead	U	2	N/A	C		1	24	-	720	1900	792	83.6%
8/2	Circ East Right Ahead	U	2	N/A	C		1	24	-	722	1900	792	87.9%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	720	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	1063	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	201	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	445	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	807	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**30.0**	**106.1**	**0.0**	**136.1**	-	-	-	-
A3 (M) Junction 2	-	-	**0**	**0**	**0**	**30.0**	**106.1**	**0.0**	**136.1**	-	-	-	-
1/2+1/1	745	745	-	-	-	3.5	6.3	-	9.8	47.2	11.8	6.3	18.1
2/1	657	657	-	-	-	1.4	0.8	-	2.2	11.8	6.8	0.8	7.5
2/2	600	600	-	-	-	1.2	0.6	-	1.8	10.9	6.0	0.6	6.6
3/1	572	572	-	-	-	1.5	0.7	-	2.3	14.2	6.5	0.7	7.2
3/2	1044	960	-	-	-	6.5	47.5	-	53.9	186.0	18.8	47.5	66.3
4/1	80	80	-	-	-	0.4	0.1	-	0.5	22.5	1.0	0.1	1.2
4/2	398	398	-	-	-	2.4	3.4	-	5.8	52.3	6.3	3.4	9.7
5/1	203	203	-	-	-	0.2	0.4	-	0.7	11.6	1.3	0.4	1.7
5/2	201	201	-	-	-	0.3	0.4	-	0.7	12.4	1.3	0.4	1.7
6/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	600	540	-	-	-	4.0	34.4	-	38.4	230.4	11.5	34.4	45.8
7/1	667	667	-	-	-	3.0	0.9	-	3.9	20.8	10.6	0.9	11.5
7/2	960	960	-	-	-	0.4	4.8	-	5.2	19.5	1.0	4.8	5.8
8/1	662	662	-	-	-	3.5	2.5	-	6.0	32.7	11.0	2.5	13.5
8/2	696	696	-	-	-	1.7	3.4	-	5.1	26.4	5.9	3.4	9.3
9/1	662	662	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1037	1037	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	201	201	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	445	445	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

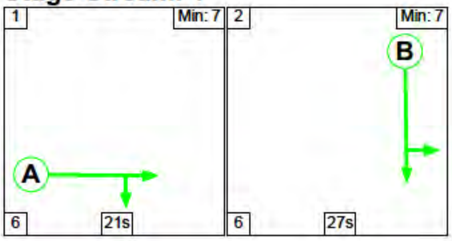
C1	Stream: 1	PRC for Signalled Lanes (%):	-1.6	Total Delay for Signalled Lanes (pcuHr):	15.35	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-4.6	Total Delay for Signalled Lanes (pcuHr):	20.88	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	47.9	Total Delay for Signalled Lanes (pcuHr):	5.32	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	-23.5	Total Delay for Signalled Lanes (pcuHr):	94.60	Cycle Time (s):	60
		PRC Over All Lanes (%):	-23.5	Total Delay Over All Lanes(pcuHr):	136.15		

Full Input Data And Results

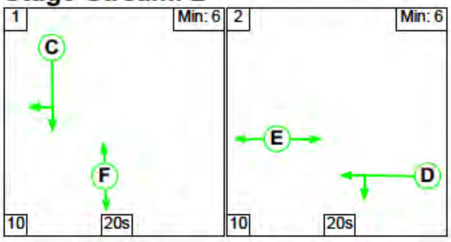
Scenario 5: 'DS2 AM' (FG5: 'DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

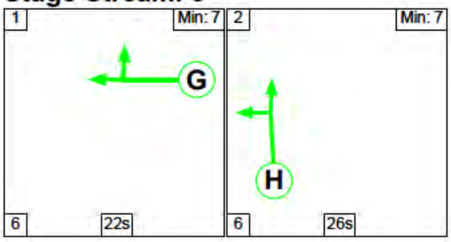
Stage Stream: 1



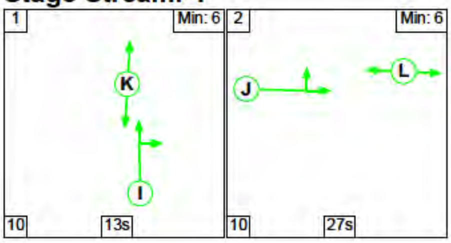
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	27
Change Point	0	27

Stage Stream: 2

Stage	1	2
Duration	20	20
Change Point	33	3

Stage Stream: 3

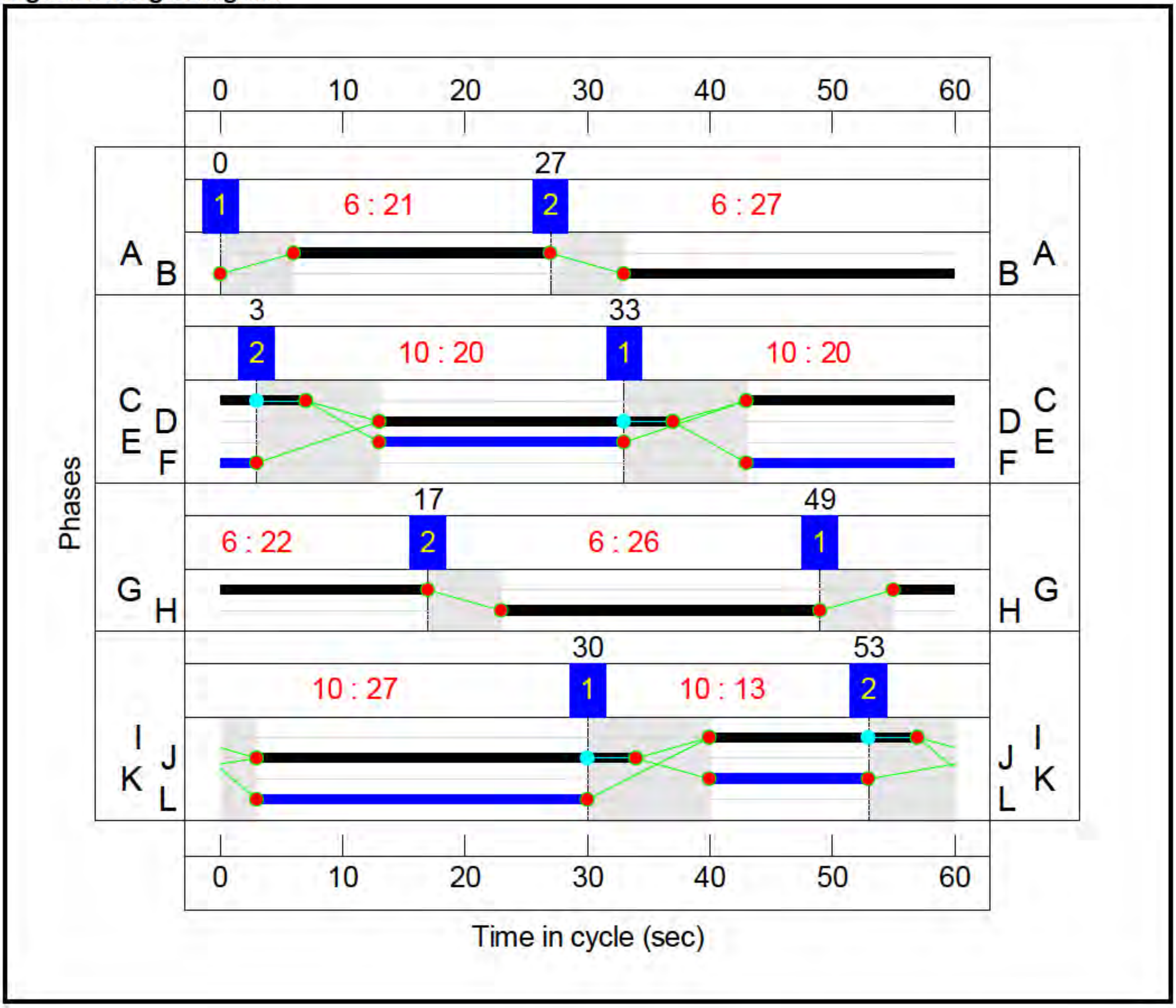
Stage	1	2
Duration	22	26
Change Point	49	17

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	13	27
Change Point	30	53

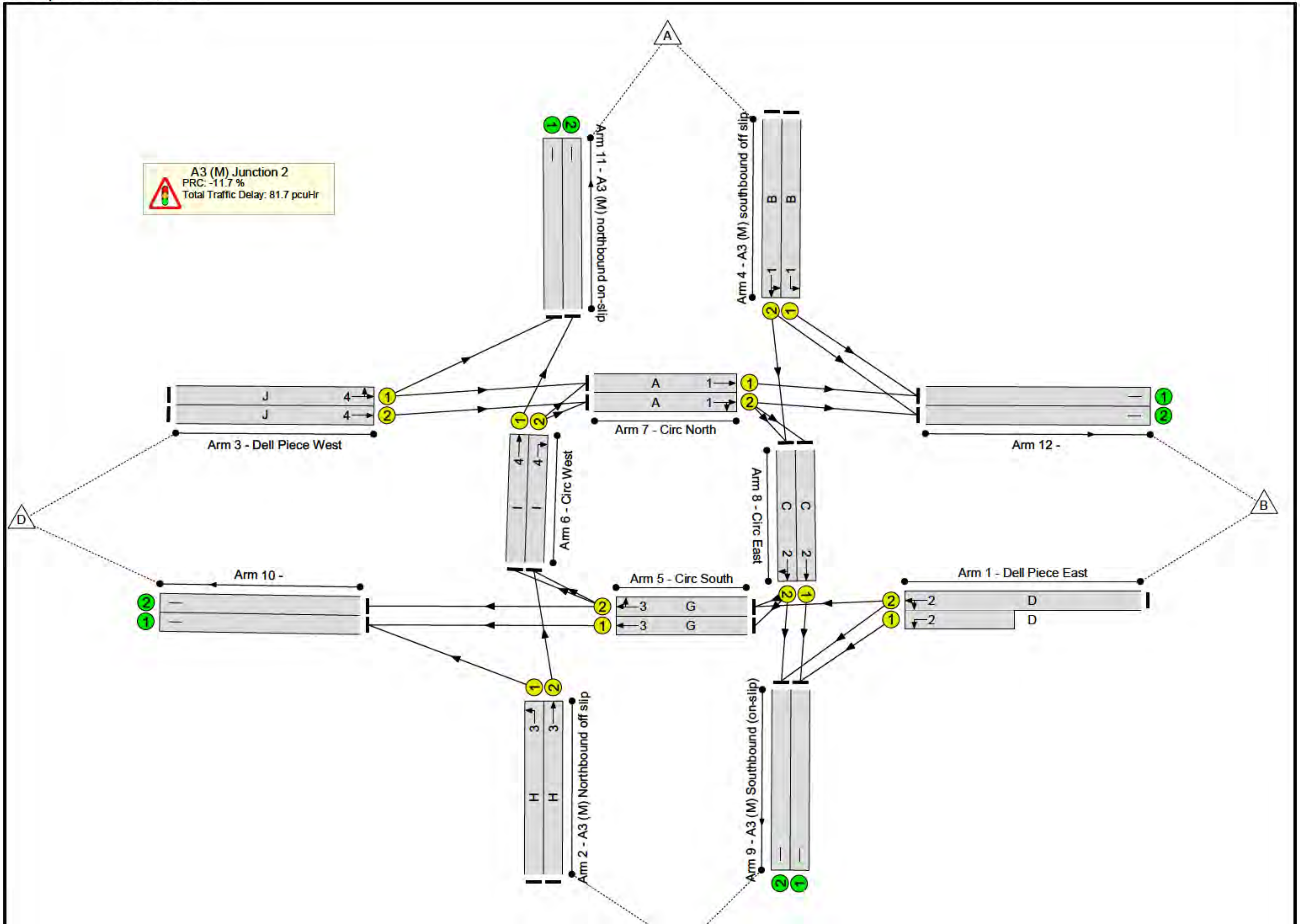
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.5%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.5%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	24	-	864	1900:1900	792+72	100.0 : 100.0%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	26	-	417	1800	810	51.5%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	26	-	457	1800	810	56.4%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	31	-	701	1800	960	73.0%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	31	-	606	1800	960	63.1%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	27	-	145	1800	840	17.3%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	27	-	796	1800	840	94.8%
5/1	Circ South Ahead	U	3	N/A	G		1	22	-	410	1900	728	56.0%
5/2	Circ South Right Ahead	U	3	N/A	G		1	22	-	404	1900	728	55.2%
6/1	Circ West Ahead	U	4	N/A	I		1	17	-	2	1800	540	0.4%
6/2	Circ West Right	U	4	N/A	I		1	17	-	457	1800	540	84.6%
7/1	Circ North Ahead	U	1	N/A	A		1	21	-	609	1800	660	92.3%
7/2	Circ North Right Ahead	U	1	N/A	A		1	21	-	606	1800	660	91.8%
8/1	Circ East Ahead	U	2	N/A	C		1	24	-	606	1900	792	76.5%
8/2	Circ East Right Ahead	U	2	N/A	C		1	24	-	796	1900	792	100.5%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	678	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	774	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	827	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	402	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	549	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	754	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.2**	**55.6**	**0.0**	**81.7**	**-**	**-**	**-**	**-**
A3 (M) Junction 2	**-**	**-**	**0**	**0**	**0**	**26.2**	**55.6**	**0.0**	**81.7**	**-**	**-**	**-**	**-**
1/2+1/1	864	864	-	-	-	4.1	14.8	-	18.9	78.7	13.4	14.8	28.2
2/1	417	417	-	-	-	1.4	0.5	-	1.9	16.4	4.9	0.5	5.4
2/2	457	457	-	-	-	1.5	0.6	-	2.2	17.2	5.6	0.6	6.2
3/1	701	701	-	-	-	2.1	1.3	-	3.4	17.6	8.8	1.3	10.1
3/2	606	606	-	-	-	1.7	0.9	-	2.5	14.9	7.1	0.9	7.9
4/1	145	145	-	-	-	0.4	0.1	-	0.5	11.9	1.4	0.1	1.5
4/2	796	796	-	-	-	3.4	6.9	-	10.3	46.5	12.6	6.9	19.5
5/1	408	408	-	-	-	0.3	0.6	-	0.9	8.0	1.6	0.6	2.3
5/2	402	402	-	-	-	0.4	0.6	-	1.0	8.8	1.8	0.6	2.5
6/1	2	2	-	-	-	0.0	0.0	-	0.0	37.0	0.0	0.0	0.0
6/2	457	457	-	-	-	1.0	2.6	-	3.6	28.0	7.1	2.6	9.7
7/1	609	609	-	-	-	2.8	5.0	-	7.8	46.1	9.8	5.0	14.8
7/2	606	606	-	-	-	1.9	4.8	-	6.6	39.4	4.0	4.8	8.8
8/1	606	606	-	-	-	4.2	1.6	-	5.8	34.7	10.1	1.6	11.7
8/2	796	792	-	-	-	1.1	15.2	-	16.3	73.9	13.3	15.2	28.6
9/1	678	678	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	774	774	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	825	825	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	549	549	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	754	754	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

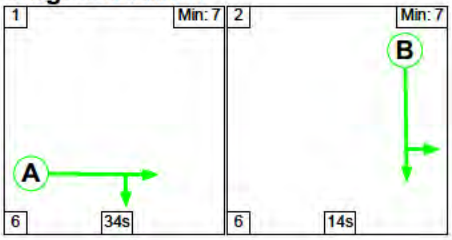
C1	Stream: 1	PRC for Signalled Lanes (%):	-5.3	Total Delay for Signalled Lanes (pcuHr):	25.18	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-11.7	Total Delay for Signalled Lanes (pcuHr):	41.09	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	59.5	Total Delay for Signalled Lanes (pcuHr):	5.97	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	6.3	Total Delay for Signalled Lanes (pcuHr):	9.51	Cycle Time (s):	60
		PRC Over All Lanes (%):	-11.7	Total Delay Over All Lanes(pcuHr):	81.74		

Full Input Data And Results

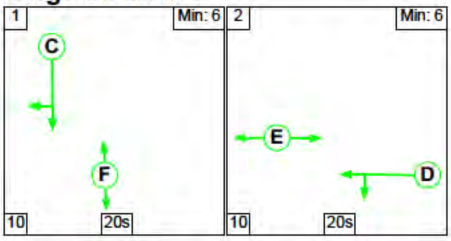
Scenario 6: 'DS2 PM' (FG6: 'DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

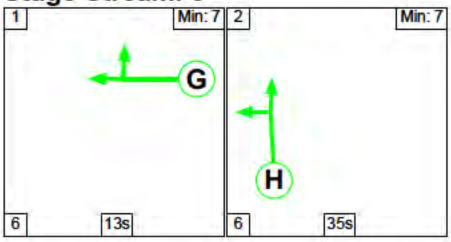
Stage Stream: 1



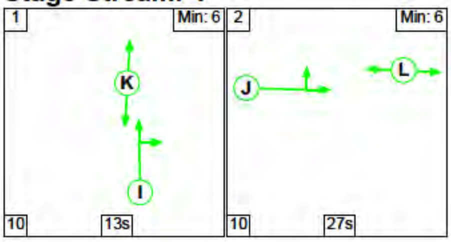
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	34	14
Change Point	0	40

Stage Stream: 2

Stage	1	2
Duration	20	20
Change Point	34	4

Stage Stream: 3

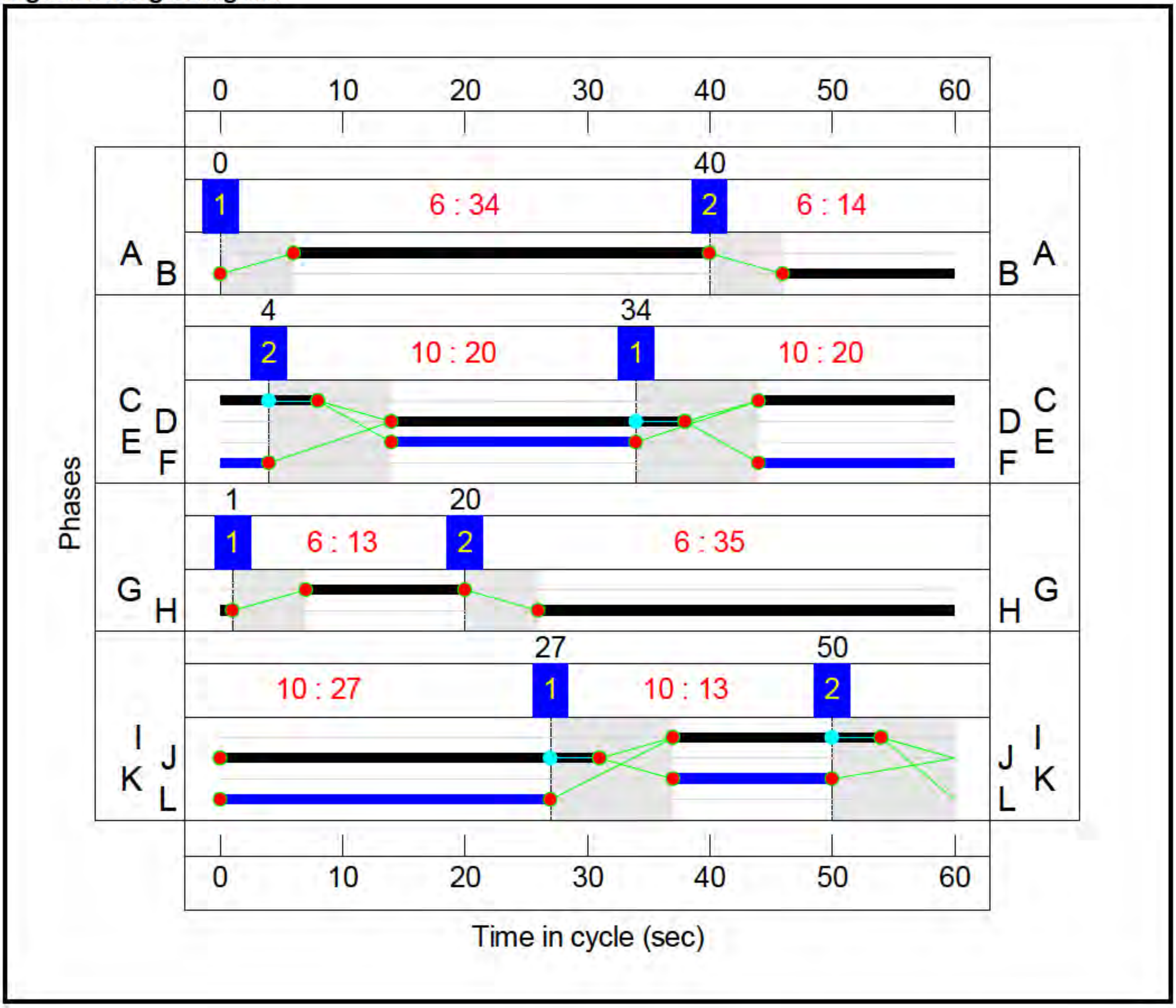
Stage	1	2
Duration	13	35
Change Point	1	20

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	13	27
Change Point	27	50

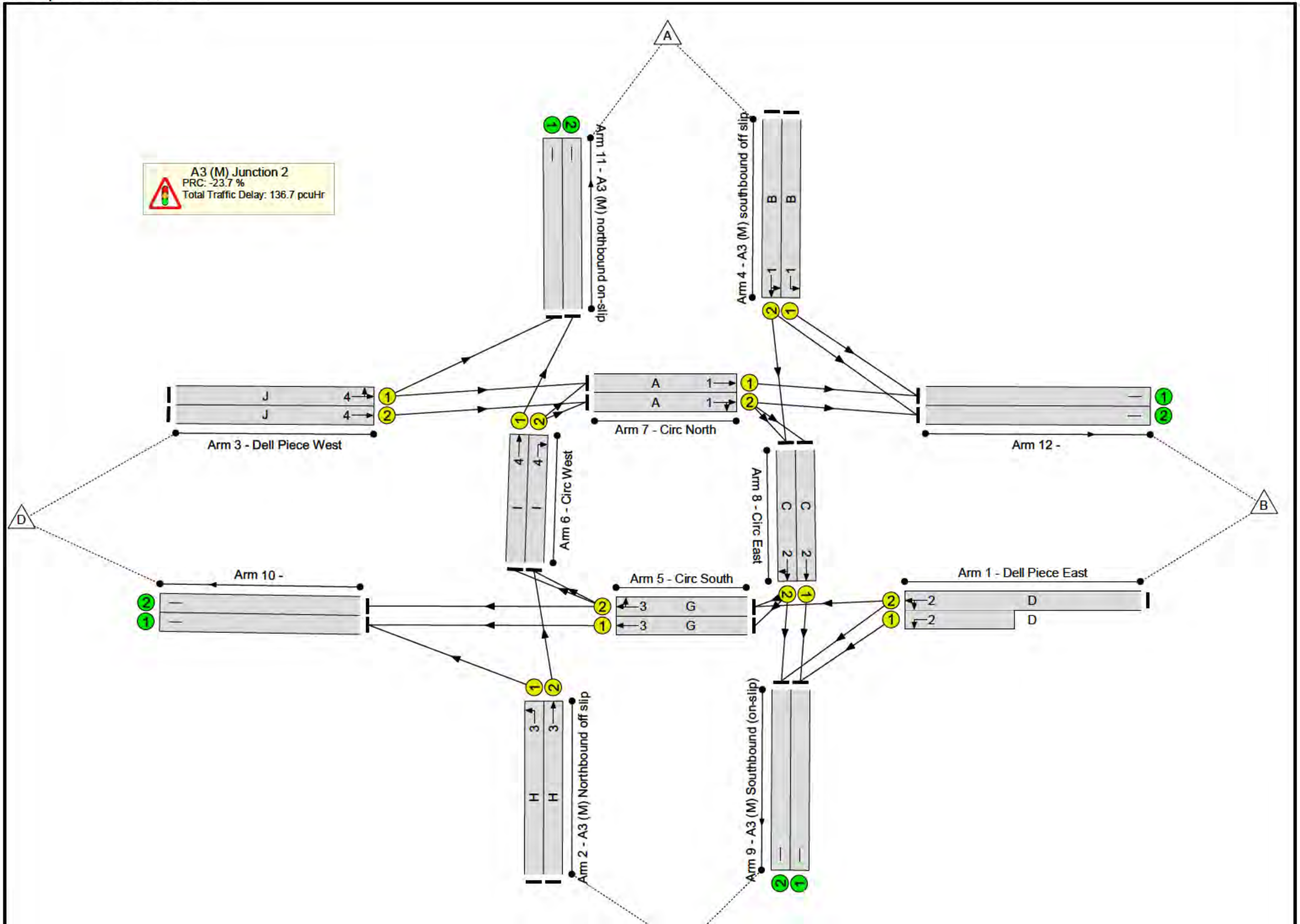
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.3%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.3%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	24	-	744	1900:1900	792+0	94.0 : 0.0%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	35	-	653	1800	1080	60.5%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	35	-	601	1800	1080	55.6%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	31	-	572	1800	960	59.6%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	31	-	1044	1800	960	108.8%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	14	-	80	1800	450	17.8%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	14	-	400	1800	450	88.9%
5/1	Circ South Ahead	U	3	N/A	G		1	13	-	204	1900	443	46.0%
5/2	Circ South Right Ahead	U	3	N/A	G		1	13	-	202	1900	443	45.6%
6/1	Circ West Ahead	U	4	N/A	I		1	17	-	0	1800	540	0.0%
6/2	Circ West Right	U	4	N/A	I		1	17	-	601	1800	540	111.3%
7/1	Circ North Ahead	U	1	N/A	A		1	34	-	727	1800	1050	63.4%
7/2	Circ North Right Ahead	U	1	N/A	A		1	34	-	1044	1800	1050	91.4%
8/1	Circ East Ahead	U	2	N/A	C		1	24	-	722	1900	792	83.9%
8/2	Circ East Right Ahead	U	2	N/A	C		1	24	-	722	1900	792	87.9%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	722	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	1060	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	857	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	202	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	446	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	807	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**30.1**	**106.7**	**0.0**	**136.7**	-	-	-	-
A3 (M) Junction 2	-	-	**0**	**0**	**0**	**30.1**	**106.7**	**0.0**	**136.7**	-	-	-	-
1/2+1/1	744	744	-	-	-	3.5	6.2	-	9.7	46.8	11.8	6.2	18.0
2/1	653	653	-	-	-	1.4	0.8	-	2.1	11.7	6.7	0.8	7.5
2/2	601	601	-	-	-	1.2	0.6	-	1.8	11.0	6.0	0.6	6.6
3/1	572	572	-	-	-	1.5	0.7	-	2.3	14.2	6.5	0.7	7.2
3/2	1044	960	-	-	-	6.5	47.5	-	53.9	186.0	18.8	47.5	66.3
4/1	80	80	-	-	-	0.4	0.1	-	0.5	22.5	1.0	0.1	1.2
4/2	400	400	-	-	-	2.4	3.5	-	5.9	53.3	6.3	3.5	9.8
5/1	204	204	-	-	-	0.2	0.4	-	0.7	11.6	1.3	0.4	1.7
5/2	202	202	-	-	-	0.3	0.4	-	0.7	12.4	1.3	0.4	1.8
6/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	601	540	-	-	-	4.1	34.8	-	38.9	232.9	11.5	34.8	46.3
7/1	666	666	-	-	-	3.0	0.9	-	3.8	20.8	10.6	0.9	11.4
7/2	960	960	-	-	-	0.4	4.8	-	5.2	19.5	1.0	4.8	5.8
8/1	664	664	-	-	-	3.6	2.5	-	6.1	32.9	11.1	2.5	13.6
8/2	696	696	-	-	-	1.7	3.4	-	5.1	26.5	5.9	3.4	9.3
9/1	664	664	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1034	1034	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	857	857	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	446	446	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	746	746	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

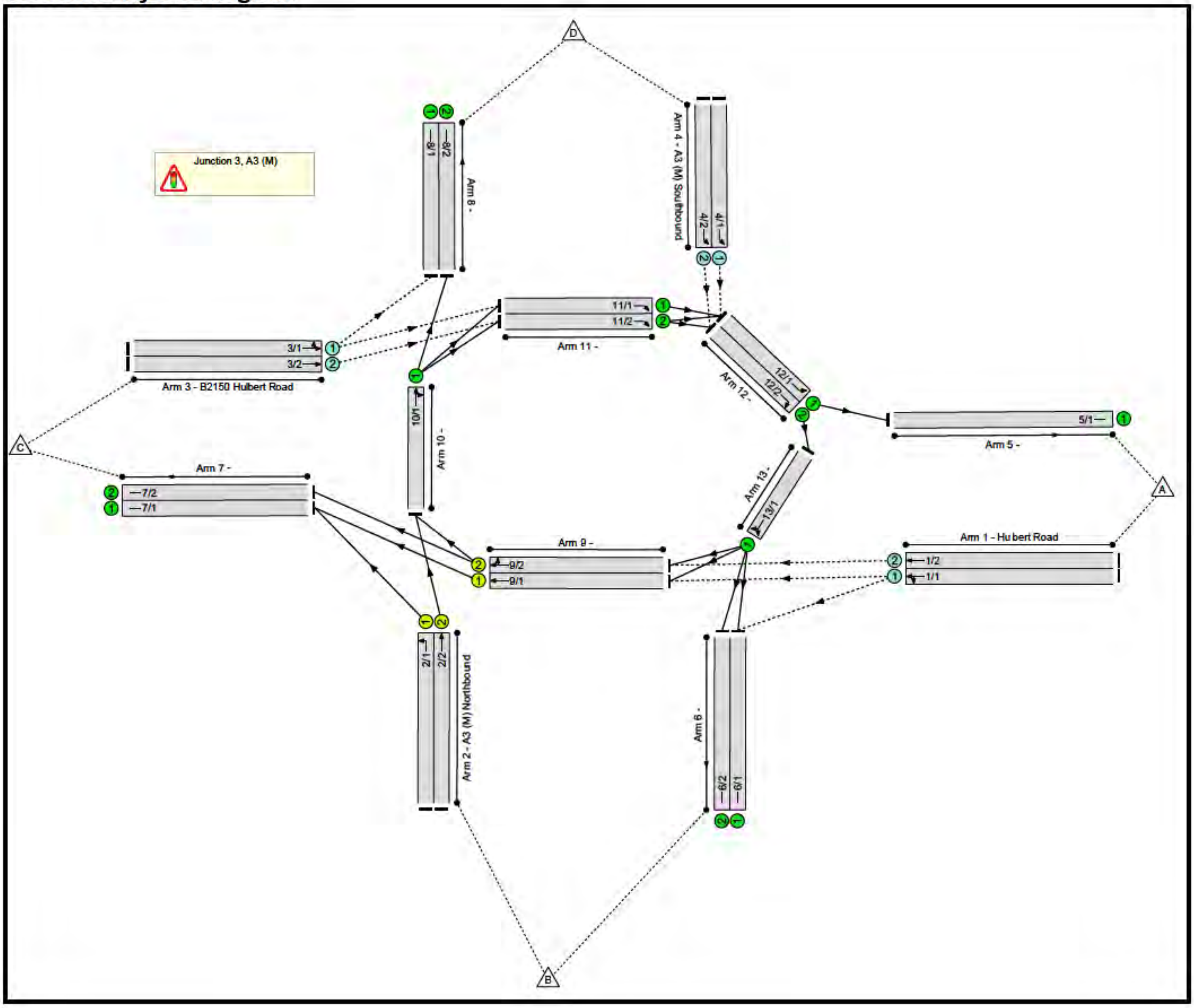
C1	Stream: 1	PRC for Signalled Lanes (%):	-1.6	Total Delay for Signalled Lanes (pcuHr):	15.48	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-4.4	Total Delay for Signalled Lanes (pcuHr):	20.84	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	48.9	Total Delay for Signalled Lanes (pcuHr):	5.31	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	-23.7	Total Delay for Signalled Lanes (pcuHr):	95.09	Cycle Time (s):	60
		PRC Over All Lanes (%):	-23.7	Total Delay Over All Lanes(pcuHr):	136.72		

Full Input Data And Results

User and Project Details

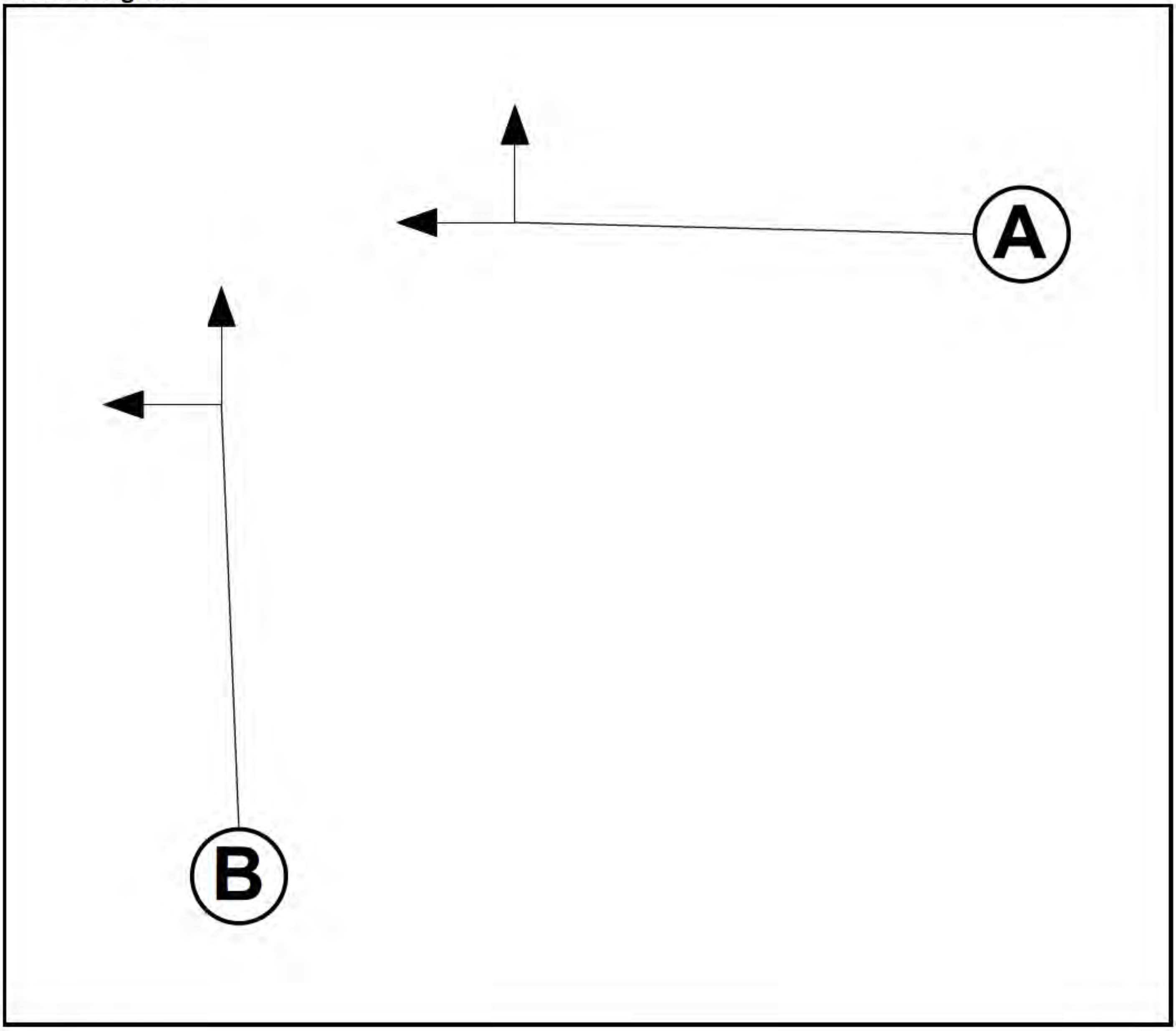
Project:	
Title:	
Location:	
Additional detail:	
File name:	A3 (M) J3 – Prohibited left turn from offside lane of A3 (south) approach .lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

Phase Intergreens Matrix

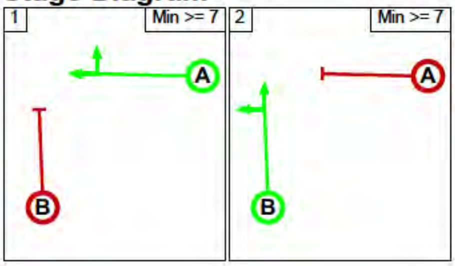
Terminating Phase	Starting Phase: A	Starting Phase: B
A		5
B	5	

Phases in Stage

Stage No.	Phases in Stage
1	A
2	B

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Junction 3, A3 (M)												
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Hulbert Road)	6/1 (Left)	1000	0	13/1	0.33	All	-	-	-	-	-
	9/1 (Ahead)	1000	0	13/1	0.33	All					
1/2 (Hulbert Road)	9/2 (Ahead)	1000	0	13/1	0.33	All	-	-	-	-	-
3/1 (B2150 Hulbert Road)	8/1 (Left)	1000	0	10/1	0.33	To 8/2 (Ahead)	-	-	-	-	-
	11/1 (Ahead)	1000	0	10/1	1.09	To 8/2 (Ahead) To 11/1 (Right)					
3/2 (B2150 Hulbert Road)	11/2 (Ahead)	1000	0	10/1	0.33	All	-	-	-	-	-
4/1 (A3 (M) Southbound)	12/1 (Left)	1000	0	11/1	0.33	All	-	-	-	-	-
4/2 (A3 (M) Southbound)	12/2 (Left)	1000	0	11/2	0.33	All	-	-	-	-	-
				11/1	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: Junction 3, A3 (M)												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 6 Left Arm 9 Ahead	Inf Inf
1/2 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	N	Arm 9 Ahead	Inf
2/1 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.83	0.00	Y	Arm 7 Left	5431.00
2/2 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.61	0.00	N	Arm 10 Ahead	126.00
3/1 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.81	0.00	Y	Arm 8 Left Arm 11 Ahead	645.00 Inf
3/2 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.90	0.00	N	Arm 11 Ahead	122.00
4/1 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.48	0.00	Y	Arm 12 Left	122.00
4/2 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.58	0.00	N	Arm 12 Left	164.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U	A	2	3	20.9	Geom	-	4.04	0.00	Y	Arm 7 Ahead	111.00
9/2	U	A	2	3	20.9	Geom	-	4.00	0.00	N	Arm 7 Ahead Arm 10 Right	127.00 70.00
10/1	U		2	3	19.1	Inf	-	-	-	-	-	-
11/1	U		2	3	27.0	Inf	-	-	-	-	-	-
11/2	U		2	3	27.0	Inf	-	-	-	-	-	-
12/1	U		2	3	15.7	Inf	-	-	-	-	-	-
12/2	U		2	3	15.7	Inf	-	-	-	-	-	-
13/1	U		2	3	7.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2026 DM AM'	08:00	09:00	01:00	
2: '2026 DM PM'	17:00	18:00	01:00	
3: '2026 DS1 AM'	08:00	09:00	01:00	
4: '2026 DS1 PM'	17:00	18:00	01:00	
5: '2026 DS2 AM'	08:00	09:00	01:00	
6: '2026 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2026 DM AM' (FG1: '2026 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	257	404	676
	B	42	0	1063	0	1105
	C	853	399	0	574	1826
	D	733	0	252	0	985
	Tot.	1628	414	1572	978	4592

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2026 DM AM
Junction: Junction 3, A3 (M)	
1/1	245
1/2	431
2/1	1063
2/2	42
3/1	841
3/2	985
4/1	733
4/2	252
5/1	1628
6/1	215
6/2	199
7/1	1506
7/2	66
8/1	574
8/2	404
9/1	443
9/2	470
10/1	446
11/1	288
11/2	1006
12/1	1628
12/2	651
13/1	651

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	6.1 %	1990	1990
				Arm 9 Ahead	Inf	93.9 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	68.3 %	1993	1993
				Arm 11 Ahead	Inf	31.7 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	14.0 %	2113	2113
				Arm 10 Right	70.00	86.0 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: '2026 DM PM' (FG2: '2026 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	48	464	141	653
	B	19	0	1141	0	1160
	C	52	703	0	818	1573
	D	1150	0	314	0	1464
	Tot.	1221	751	1919	959	4850

Traffic Lane Flows

Lane	Scenario 2: 2026 DM PM
Junction: Junction 3, A3 (M)	
1/1	323
1/2	330
2/1	1141
2/2	19
3/1	818
3/2	755
4/1	1150
4/2	314
5/1	1221
6/1	400
6/2	351
7/1	1583
7/2	336
8/1	818
8/2	141
9/1	442
9/2	477
10/1	160
11/1	10
11/2	764
12/1	1221
12/2	1017
13/1	1017

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	14.9 %	1990	1990
				Arm 9 Ahead	Inf	85.1 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	100.0 %	1991	1991
				Arm 11 Ahead	Inf	0.0 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	70.4 %	2124	2124
				Arm 10 Right	70.00	29.6 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: '2026 DS1 AM' (FG3: '2026 DS1 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	290	415	720
	B	42	0	1160	0	1202
	C	851	358	0	603	1812
	D	741	0	223	0	964
	Tot.	1634	373	1673	1018	4698

Traffic Lane Flows

Lane	Scenario 3: 2026 DS1 AM
Junction: Junction 3, A3 (M)	
1/1	277
1/2	443
2/1	1160
2/2	42
3/1	837
3/2	975
4/1	741
4/2	223
5/1	1634
6/1	194
6/2	179
7/1	1610
7/2	63
8/1	603
8/2	415
9/1	450
9/2	478
10/1	457
11/1	255
11/2	996
12/1	1634
12/2	581
13/1	581

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	5.4 %	1990	1990
				Arm 9 Ahead	Inf	94.6 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	72.0 %	1993	1993
				Arm 11 Ahead	Inf	28.0 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	13.2 %	2112	2112
				Arm 10 Right	70.00	86.8 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2026 DS1 PM' (FG4: '2026 DS1 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	48	457	211	716
	B	19	0	1226	0	1245
	C	56	703	0	641	1400
	D	1155	0	292	0	1447
	Tot.	1230	751	1975	852	4808

Traffic Lane Flows

Lane	Scenario 4: 2026 DS1 PM
Junction: Junction 3, A3 (M)	
1/1	333
1/2	383
2/1	1226
2/2	19
3/1	677
3/2	723
4/1	1155
4/2	292
5/1	1230
6/1	400
6/2	351
7/1	1689
7/2	286
8/1	641
8/2	211
9/1	463
9/2	497
10/1	230
11/1	46
11/2	732
12/1	1230
12/2	995
13/1	995

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	14.4 %	1990	1990
				Arm 9 Ahead	Inf	85.6 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	94.7 %	1992	1992
				Arm 11 Ahead	Inf	5.3 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	57.5 %	2121	2121
				Arm 10 Right	70.00	42.5 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2026 DS2 AM' (FG5: '2026 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	289	416	720
	B	42	0	1154	0	1196
	C	849	360	0	604	1813
	D	740	0	224	0	964
	Tot.	1631	375	1667	1020	4693

Traffic Lane Flows

Lane	Scenario 5: 2026 DS2 AM
Junction: Junction 3, A3 (M)	
1/1	274
1/2	446
2/1	1154
2/2	42
3/1	837
3/2	976
4/1	740
4/2	224
5/1	1631
6/1	195
6/2	180
7/1	1605
7/2	62
8/1	604
8/2	416
9/1	451
9/2	478
10/1	458
11/1	254
11/2	997
12/1	1631
12/2	584
13/1	584

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	5.5 %	1990	1990
				Arm 9 Ahead	Inf	94.5 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	72.2 %	1993	1993
				Arm 11 Ahead	Inf	27.8 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	13.0 %	2112	2112
				Arm 10 Right	70.00	87.0 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 6: '2026 DS2 PM' (FG6: '2026 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	48	450	211	709
	B	19	0	1233	0	1252
	C	58	703	0	643	1404
	D	1159	0	290	0	1449
	Tot.	1236	751	1973	854	4814

Traffic Lane Flows

Lane	Scenario 6: 2026 DS2 PM
Junction: Junction 3, A3 (M)	
1/1	330
1/2	379
2/1	1233
2/2	19
3/1	677
3/2	727
4/1	1159
4/2	290
5/1	1236
6/1	400
6/2	351
7/1	1693
7/2	280
8/1	643
8/2	211
9/1	460
9/2	491
10/1	230
11/1	44
11/2	736
12/1	1236
12/2	993
13/1	993

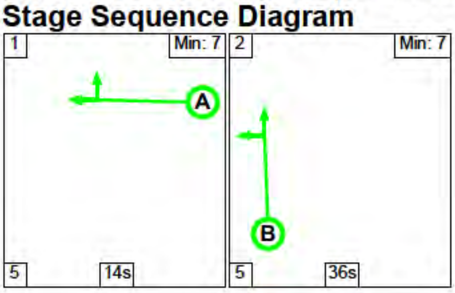
Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	14.5 %	1990	1990
				Arm 9 Ahead	Inf	85.5 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	95.0 %	1992	1992
				Arm 11 Ahead	Inf	5.0 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	57.0 %	2121	2121
				Arm 10 Right	70.00	43.0 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2026 DM AM' (FG1: '2026 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

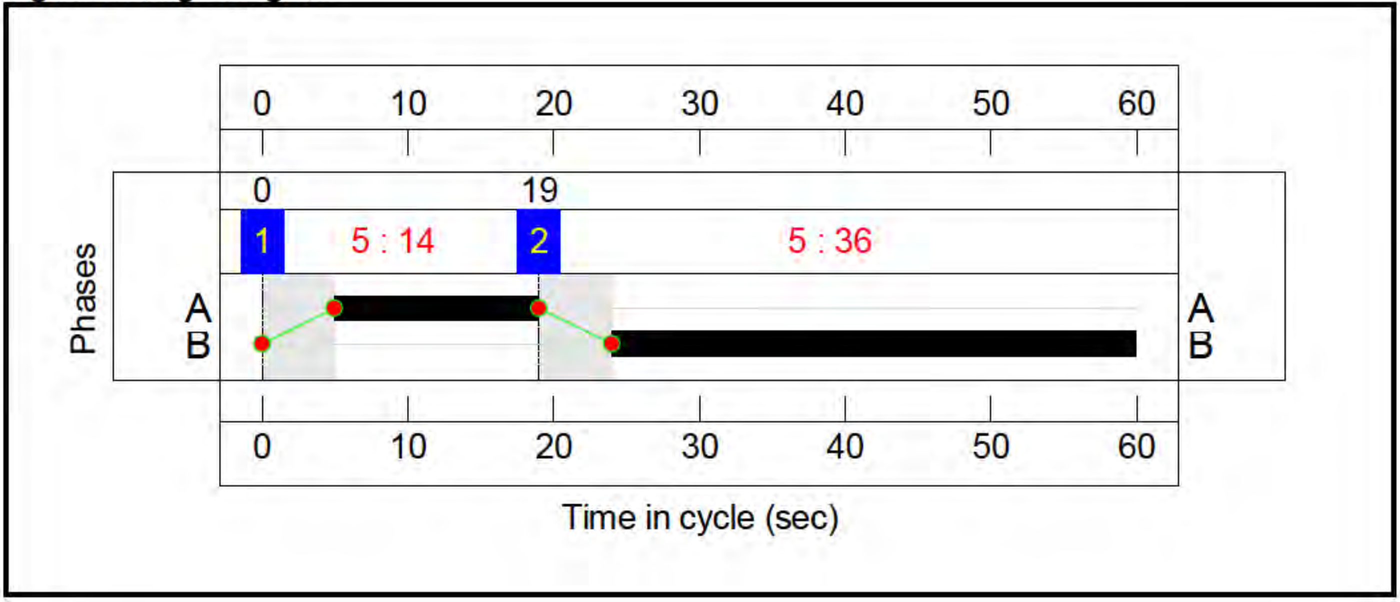


Full Input Data And Results

Stage Timings

Stage	1	2
Duration	14	36
Change Point	0	19

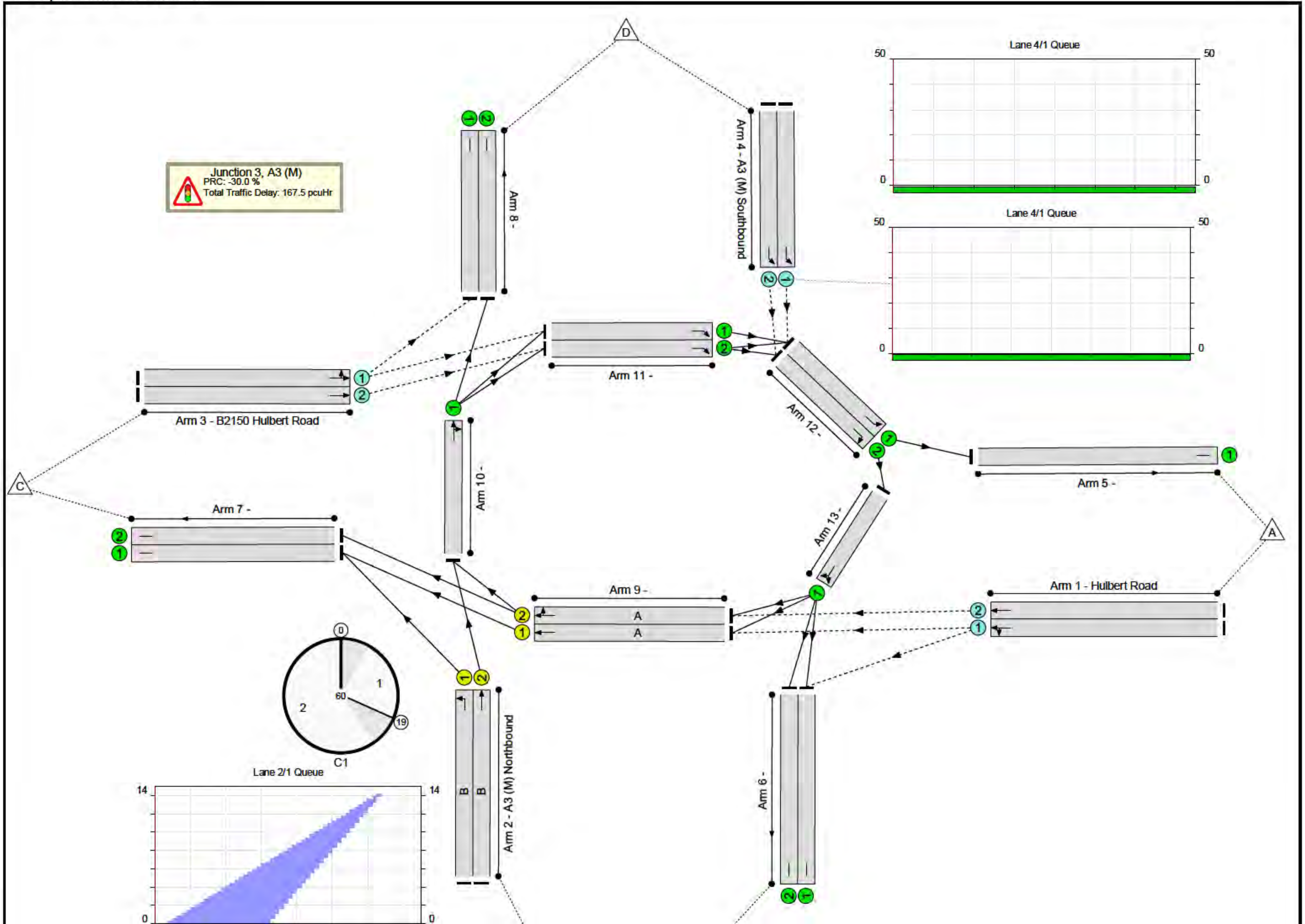
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	117.0%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	117.0%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	245	1990	803	30.5%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	431	2130	803	53.7%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	36	-	1063	1997	1231	86.3%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	36	-	42	2091	1289	3.3%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	841	1993	719	117.0%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	985	2119	853	115.5%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	733	1939	917	79.9%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	252	2094	629	40.0%
5/1		U	N/A	N/A	-		-	-	-	1628	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	215	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	199	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1506	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	66	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	574	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	14	-	443	1992	498	89.0%
9/2	Ahead Right	U	N/A	N/A	A		1	14	-	470	2113	528	89.0%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	446	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	288	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	1006	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1628	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3232**	**0**	**0**	**20.1**	**147.4**	**0.0**	**167.5**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3232**	**0**	**0**	**20.1**	**147.4**	**0.0**	**167.5**	**-**	**-**	**-**	**-**
1/1	245	245	245	0	0	0.0	0.2	-	0.2	3.2	0.0	0.2	0.2
1/2	431	431	431	0	0	0.0	0.6	-	0.6	4.8	0.0	0.6	0.6
2/1	1063	1063	-	-	-	2.8	3.0	-	5.8	19.7	14.5	3.0	17.5
2/2	42	42	-	-	-	0.1	0.0	-	0.1	6.0	0.3	0.0	0.3
3/1	841	719	719	0	0	6.1	64.4	-	70.5	301.6	38.1	64.4	102.4
3/2	985	853	853	0	0	5.7	69.8	-	75.4	275.7	44.6	69.8	114.4
4/1	733	733	733	0	0	0.0	1.9	-	1.9	9.6	0.0	1.9	1.9
4/2	252	252	252	0	0	0.0	0.3	-	0.3	4.8	0.0	0.3	0.3
5/1	1510	1510	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	188	188	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	172	172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1506	1506	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	491	491	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	443	443	-	-	-	2.7	3.6	-	6.2	50.7	7.0	3.6	10.6
9/2	470	470	-	-	-	2.8	3.6	-	6.4	49.2	7.4	3.6	11.0
10/1	446	446	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	249	249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	874	874	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1510	1510	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	597	597	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	597	597	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

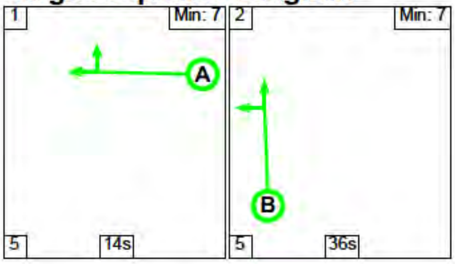
C1 PRC for Signalled Lanes (%): 1.2 Total Delay for Signalled Lanes (pcuHr): 18.56 Cycle Time (s): 60
PRC Over All Lanes (%): -30.0 Total Delay Over All Lanes(pcuHr): 167.51

Full Input Data And Results

Full Input Data And Results

Scenario 2: '2026 DM PM' (FG2: '2026 DM PM', Plan 1: 'Network Control Plan 1')

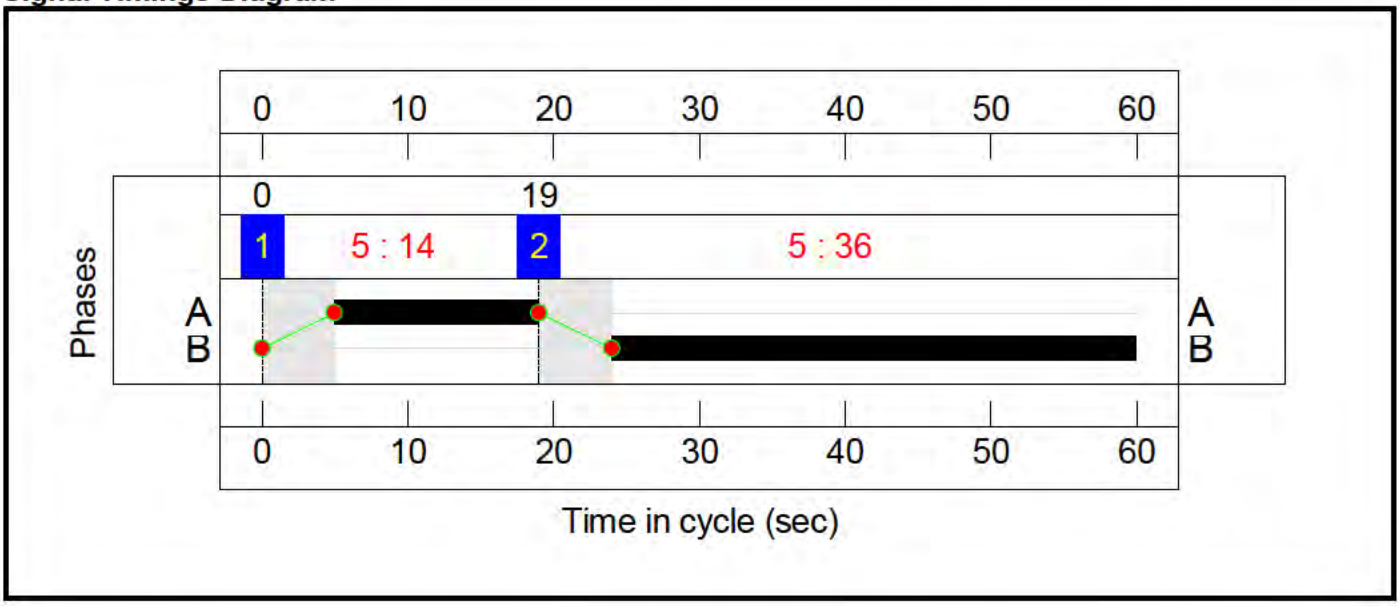
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	14	36
Change Point	0	19

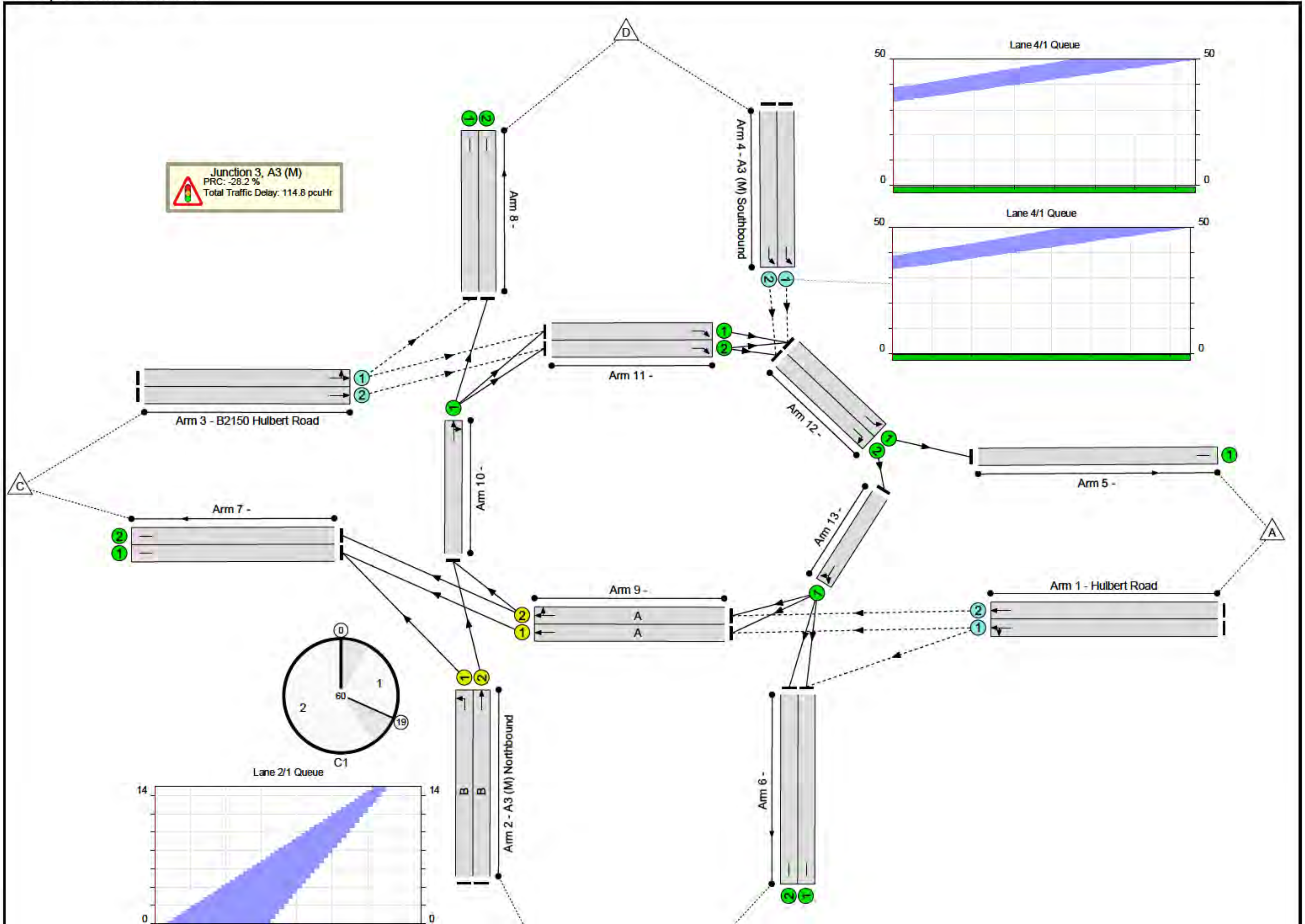
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	115.4%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	115.4%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	323	1990	664	48.6%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	330	2130	664	49.7%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	36	-	1141	1997	1231	92.7%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	36	-	19	2091	1289	1.5%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	818	1991	953	85.8%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	755	2119	947	79.7%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	1150	1939	996	115.4%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	314	2094	744	42.2%
5/1		U	N/A	N/A	-		-	-	-	1221	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1583	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	336	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	818	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	141	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	14	-	442	1992	498	88.8%
9/2	Ahead Right	U	N/A	N/A	A		1	14	-	477	2124	531	89.8%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	160	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	764	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1221	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1017	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1017	Inf	Inf	0.0%

Full Input Data And Results

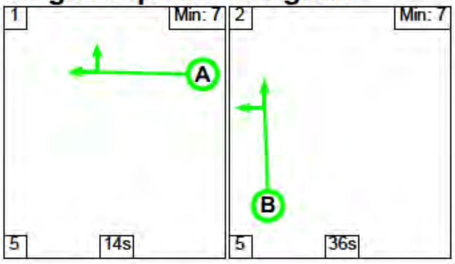
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**3536**	**0**	**0**	**15.3**	**99.5**	**0.0**	**114.8**	-	-	-	-
Junction 3, A3 (M)	-	-	**3536**	**0**	**0**	**15.3**	**99.5**	**0.0**	**114.8**	-	-	-	-
1/1	323	323	323	0	0	0.0	0.5	-	0.5	5.3	0.0	0.5	0.5
1/2	330	330	330	0	0	0.0	0.5	-	0.5	5.4	0.0	0.5	0.5
2/1	1141	1141	-	-	-	3.3	5.6	-	8.9	28.0	16.8	5.6	22.4
2/2	19	19	-	-	-	0.0	0.0	-	0.0	6.0	0.1	0.0	0.1
3/1	818	818	818	0	0	0.0	2.9	-	2.9	12.8	2.0	2.9	4.9
3/2	755	755	755	0	0	0.0	1.9	-	1.9	9.2	0.0	1.9	1.9
4/1	1150	996	996	0	0	6.4	80.4	-	86.8	271.7	57.5	80.4	137.9
4/2	314	314	314	0	0	0.0	0.4	-	0.4	4.2	0.0	0.4	0.4
5/1	1067	1067	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1583	1583	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	336	336	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	141	141	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	442	442	-	-	-	2.7	3.5	-	6.2	50.3	7.0	3.5	10.5
9/2	477	477	-	-	-	2.9	3.9	-	6.7	50.9	7.7	3.9	11.5
10/1	160	160	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	764	764	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1067	1067	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1017	1017	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1017	1017	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -2.9 Total Delay for Signalled Lanes (pcuHr): 21.82 Cycle Time (s): 60
PRC Over All Lanes (%): -28.2 Total Delay Over All Lanes(pcuHr): 114.76

Full Input Data And Results

Full Input Data And Results
Scenario 3: '2026 DS1 AM' (FG3: '2026 DS1 AM', Plan 1: 'Network Control Plan 1')

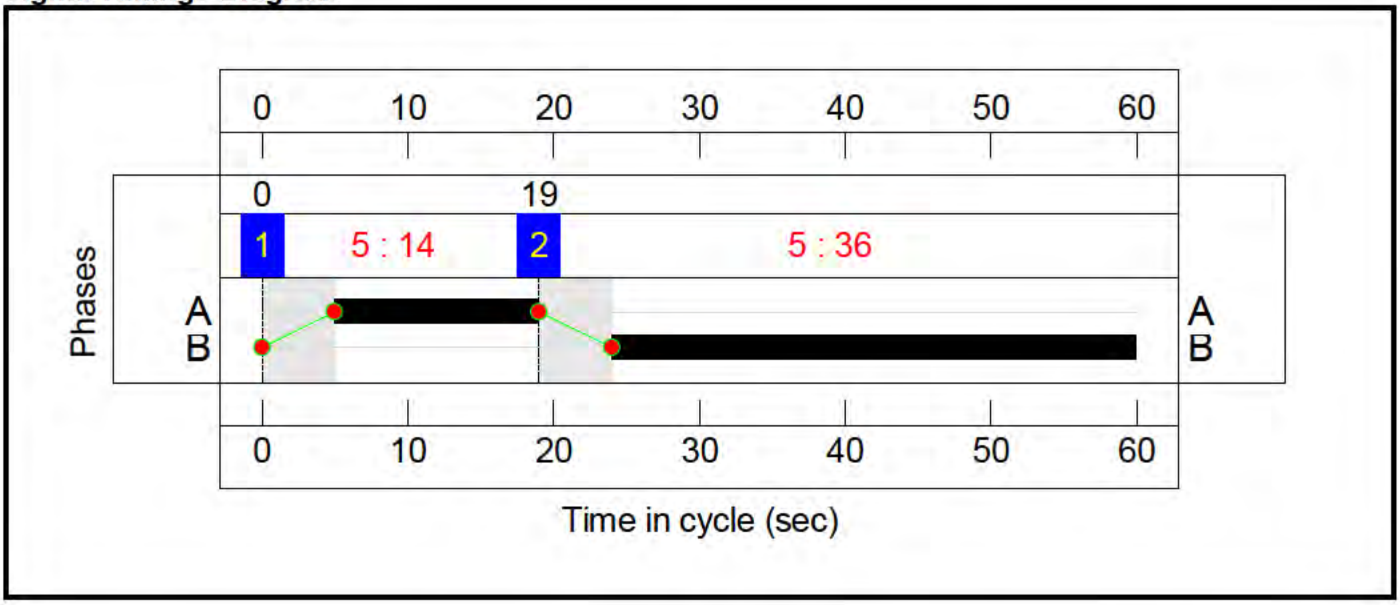
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	14	36
Change Point	0	19

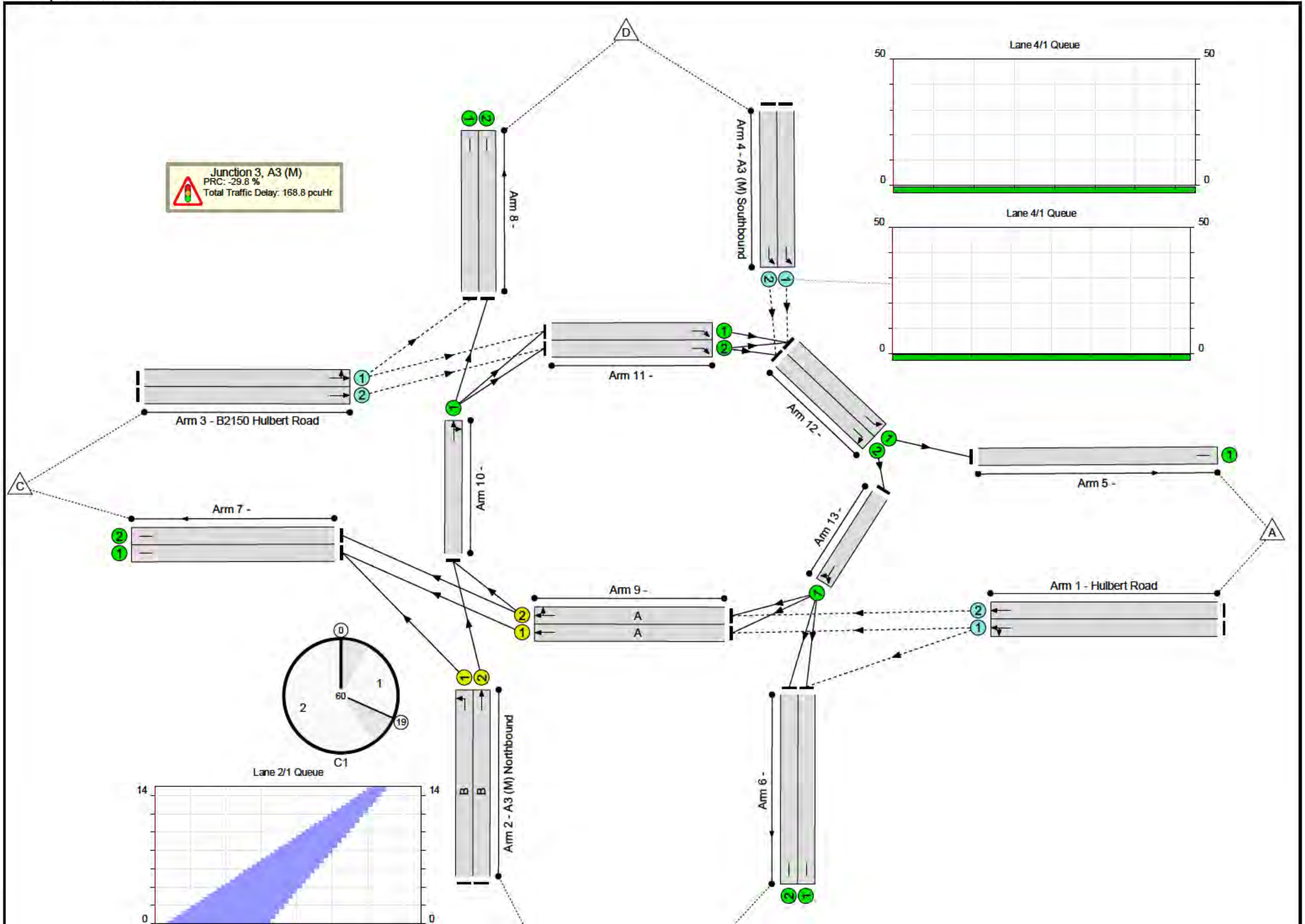
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	116.8%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	116.8%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	277	1990	823	33.6%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	443	2130	823	53.8%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	36	-	1160	1997	1231	94.2%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	36	-	42	2091	1289	3.3%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	837	1993	716	116.8%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	975	2119	849	114.9%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	741	1939	927	80.0%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	223	2094	640	34.9%
5/1		U	N/A	N/A	-		-	-	-	1634	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1610	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	63	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	603	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	14	-	450	1992	498	90.4%
9/2	Ahead Right	U	N/A	N/A	A		1	14	-	478	2112	528	90.5%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	457	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	255	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	996	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1634	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3249**	**0**	**0**	**20.6**	**148.3**	**0.0**	**168.8**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3249**	**0**	**0**	**20.6**	**148.3**	**0.0**	**168.8**	**-**	**-**	**-**	**-**
1/1	277	277	277	0	0	0.0	0.3	-	0.3	3.3	0.0	0.3	0.3
1/2	443	443	443	0	0	0.0	0.6	-	0.6	4.7	0.0	0.6	0.6
2/1	1160	1160	-	-	-	3.4	6.8	-	10.2	31.7	17.4	6.8	24.2
2/2	42	42	-	-	-	0.1	0.0	-	0.1	6.0	0.3	0.0	0.3
3/1	837	716	716	0	0	6.0	63.6	-	69.6	299.4	37.9	63.6	101.5
3/2	975	849	849	0	0	5.4	66.7	-	72.1	266.4	44.1	66.7	110.8
4/1	741	741	741	0	0	0.0	2.0	-	2.0	9.5	0.0	2.0	2.0
4/2	223	223	223	0	0	0.0	0.3	-	0.3	4.3	0.0	0.3	0.3
5/1	1521	1521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	171	171	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	156	156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1610	1610	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	63	63	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	516	516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	450	450	-	-	-	2.7	4.0	-	6.7	53.9	7.3	4.0	11.3
9/2	478	478	-	-	-	2.9	4.1	-	7.0	52.7	7.7	4.1	11.8
10/1	457	457	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	221	221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	870	870	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1521	1521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

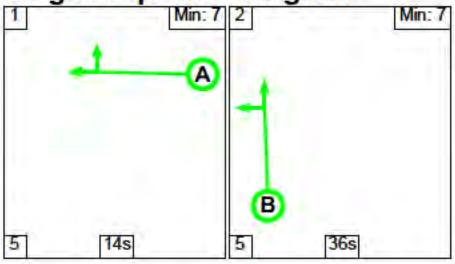
C1 PRC for Signalled Lanes (%): -4.7 Total Delay for Signalled Lanes (pcuHr): 24.02 Cycle Time (s): 60
PRC Over All Lanes (%): -29.8 Total Delay Over All Lanes(pcuHr): 168.83

Full Input Data And Results

Full Input Data And Results

Scenario 4: '2026 DS1 PM' (FG4: '2026 DS1 PM', Plan 1: 'Network Control Plan 1')

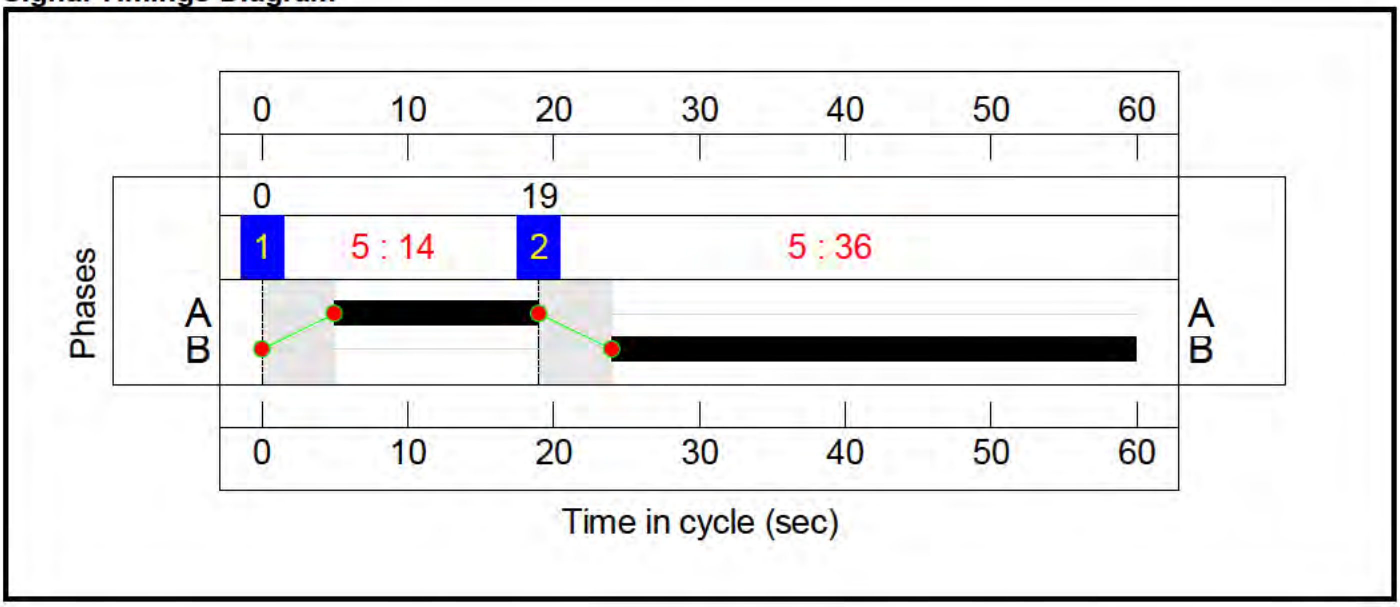
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	14	36
Change Point	0	19

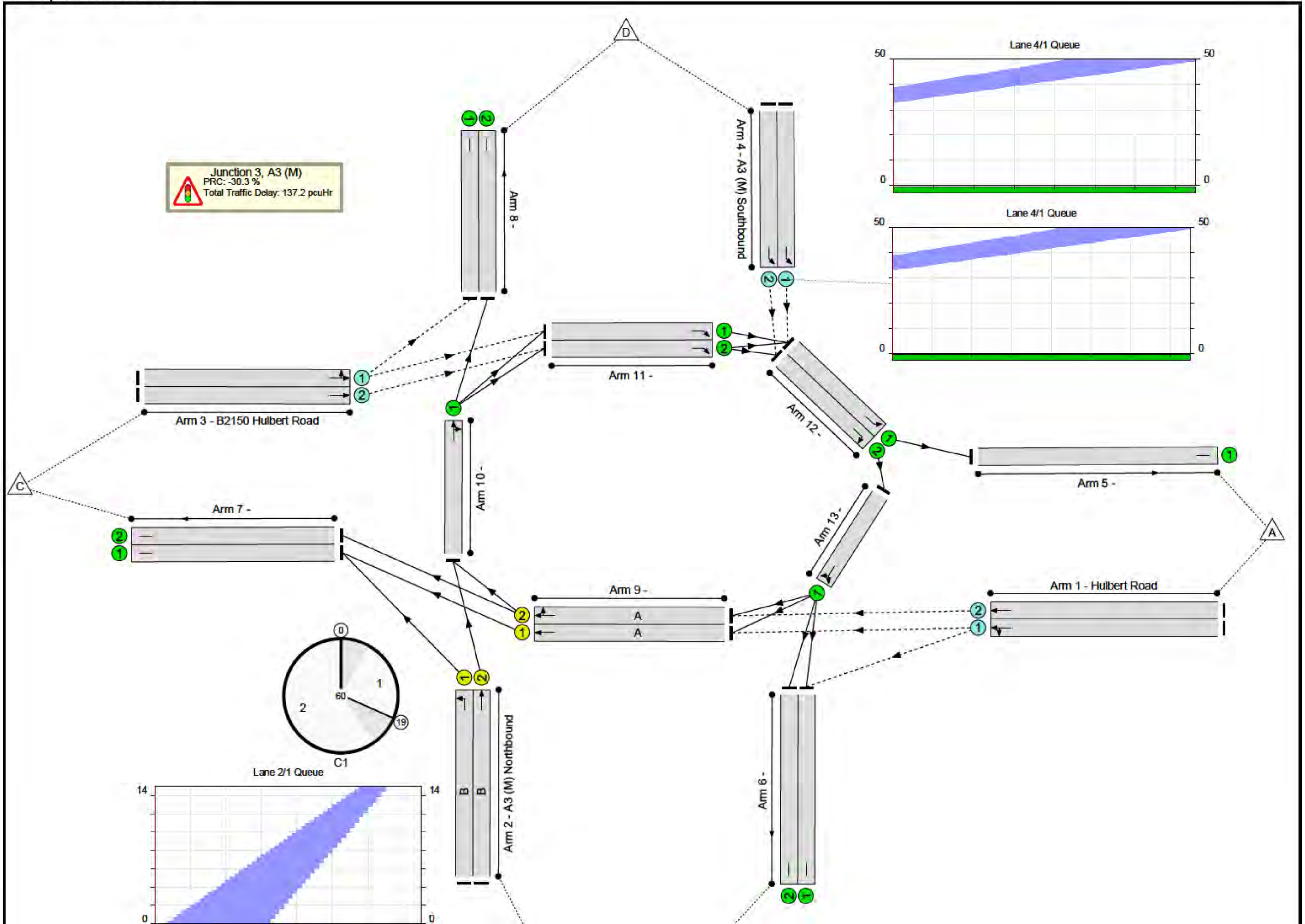
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	117.3%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	117.3%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	333	1990	671	49.6%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	383	2130	671	57.0%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	36	-	1226	1997	1231	99.6%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	36	-	19	2091	1289	1.5%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	677	1992	888	76.2%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	723	2119	924	78.3%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	1155	1939	985	117.3%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	292	2094	743	39.3%
5/1		U	N/A	N/A	-		-	-	-	1230	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1689	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	286	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	641	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	14	-	463	1992	498	93.0%
9/2	Ahead Right	U	N/A	N/A	A		1	14	-	497	2121	530	93.7%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	46	Inf	Inf	0.0%

Full Input Data And Results

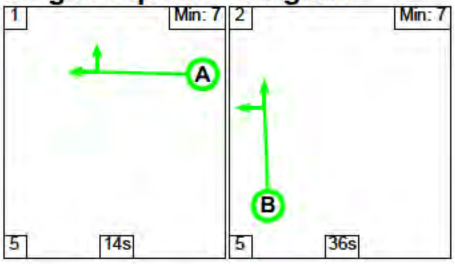
11/2	Ahead	U	N/A	N/A	-		-	-	-	732	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1230	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	995	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	995	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3393**	**0**	**0**	**17.0**	**120.2**	**0.0**	**137.2**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3393**	**0**	**0**	**17.0**	**120.2**	**0.0**	**137.2**	**-**	**-**	**-**	**-**
1/1	333	333	333	0	0	0.0	0.5	-	0.5	5.3	0.0	0.5	0.5
1/2	383	383	383	0	0	0.0	0.7	-	0.7	6.2	0.0	0.7	0.7
2/1	1226	1226	-	-	-	3.9	16.2	-	20.1	59.0	20.1	16.2	36.3
2/2	19	19	-	-	-	0.0	0.0	-	0.0	6.0	0.1	0.0	0.1
3/1	677	677	677	0	0	0.1	1.6	-	1.6	8.7	3.2	1.6	4.8
3/2	723	723	723	0	0	0.0	1.8	-	1.8	8.8	1.2	1.8	3.0
4/1	1155	985	985	0	0	7.1	88.5	-	95.6	298.0	57.7	88.5	146.2
4/2	292	292	292	0	0	0.0	0.3	-	0.3	4.0	0.0	0.3	0.3
5/1	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1689	1689	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	286	286	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	641	641	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	463	463	-	-	-	2.8	5.1	-	7.9	61.8	7.5	5.1	12.6
9/2	497	497	-	-	-	3.0	5.6	-	8.6	62.6	8.0	5.6	13.6
10/1	230	230	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	46	46	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	732	732	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	995	995	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	995	995	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

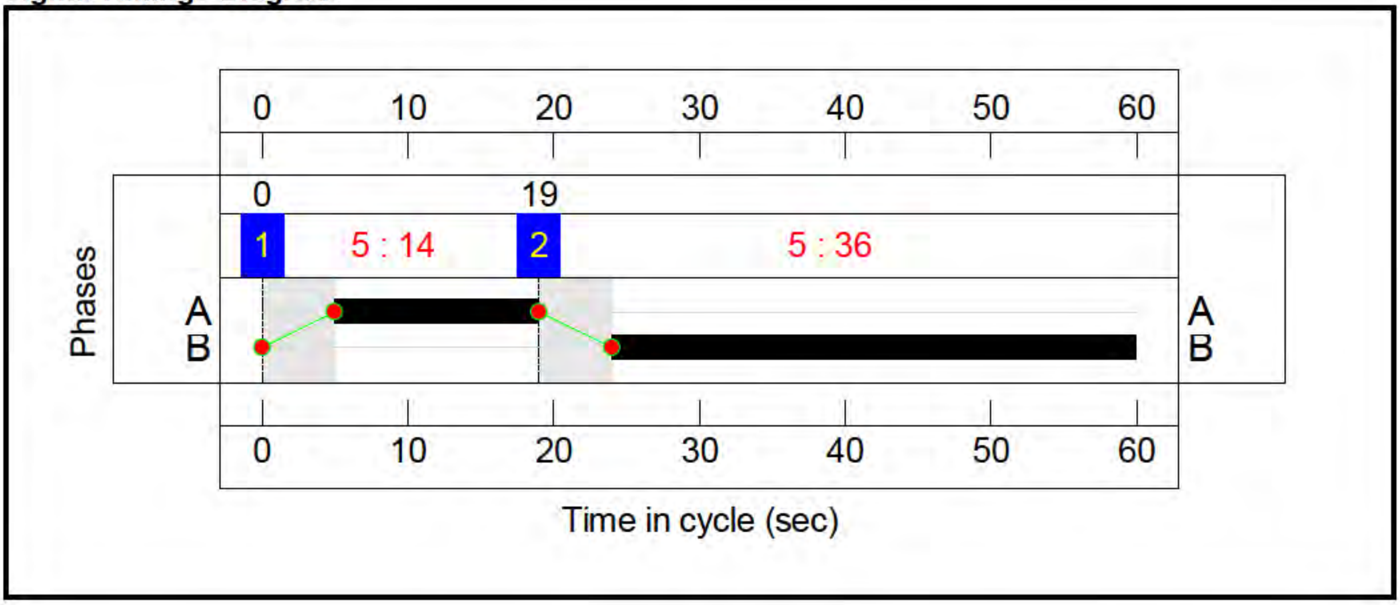
C1 PRC for Signalled Lanes (%): -10.6 Total Delay for Signalled Lanes (pcuHr): 36.69 Cycle Time (s): 60
PRC Over All Lanes (%): -30.3 Total Delay Over All Lanes(pcuHr): 137.20

Full Input Data And Results

Full Input Data And Results
Scenario 5: '2026 DS2 AM' (FG5: '2026 DS2 AM', Plan 1: 'Network Control Plan 1')
Stage Sequence Diagram


Stage Timings

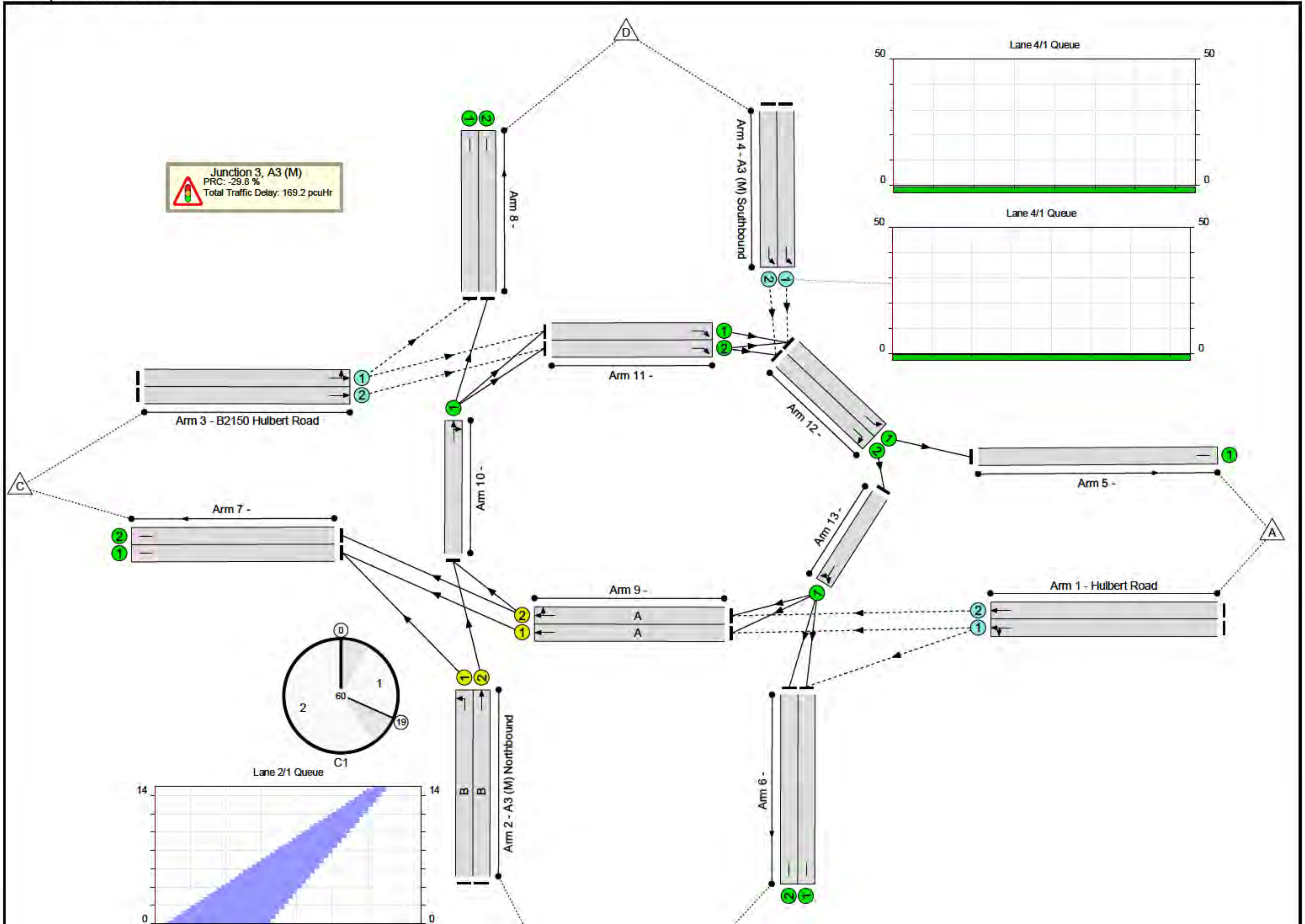
Stage	1	2
Duration	14	36
Change Point	0	19

Signal Timings Diagram


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	116.9%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	116.9%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	274	1990	823	33.3%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	446	2130	823	54.2%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	36	-	1154	1997	1231	93.7%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	36	-	42	2091	1289	3.3%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	837	1993	716	116.9%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	976	2119	849	115.0%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	740	1939	927	79.8%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	224	2094	640	35.0%
5/1		U	N/A	N/A	-		-	-	-	1631	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	195	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	180	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1605	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	62	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	604	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	416	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	14	-	451	1992	498	90.6%
9/2	Ahead Right	U	N/A	N/A	A		1	14	-	478	2112	528	90.5%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	458	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	254	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	997	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1631	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	584	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	584	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3249**	**0**	**0**	**20.6**	**148.6**	**0.0**	**169.2**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3249**	**0**	**0**	**20.6**	**148.6**	**0.0**	**169.2**	**-**	**-**	**-**	**-**
1/1	274	274	274	0	0	0.0	0.2	-	0.2	3.3	0.0	0.2	0.2
1/2	446	446	446	0	0	0.0	0.6	-	0.6	4.8	0.0	0.6	0.6
2/1	1154	1154	-	-	-	3.3	6.4	-	9.7	30.4	17.3	6.4	23.7
2/2	42	42	-	-	-	0.1	0.0	-	0.1	6.0	0.3	0.0	0.3
3/1	837	716	716	0	0	6.1	63.7	-	69.7	299.9	37.9	63.7	101.6
3/2	976	849	849	0	0	5.5	67.3	-	72.8	268.6	44.2	67.3	111.5
4/1	740	740	740	0	0	0.0	1.9	-	1.9	9.4	0.0	1.9	1.9
4/2	224	224	224	0	0	0.0	0.3	-	0.3	4.3	0.0	0.3	0.3
5/1	1517	1517	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	172	172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	157	157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1605	1605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	62	62	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	517	517	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	416	416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	451	451	-	-	-	2.7	4.1	-	6.8	54.4	7.3	4.1	11.4
9/2	478	478	-	-	-	2.9	4.1	-	7.0	52.7	7.7	4.1	11.8
10/1	458	458	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	870	870	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1517	1517	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	537	537	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	537	537	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

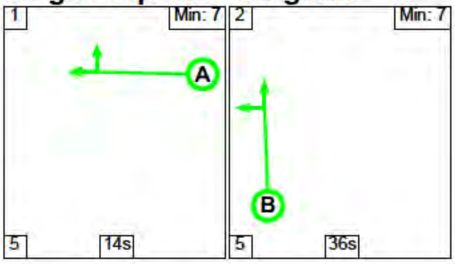
C1 PRC for Signalled Lanes (%): -4.1 Total Delay for Signalled Lanes (pcuHr): 23.63 Cycle Time (s): 60
PRC Over All Lanes (%): -29.8 Total Delay Over All Lanes(pcuHr): 169.23

Full Input Data And Results

Full Input Data And Results

Scenario 6: '2026 DS2 PM' (FG6: '2026 DS2 PM', Plan 1: 'Network Control Plan 1')

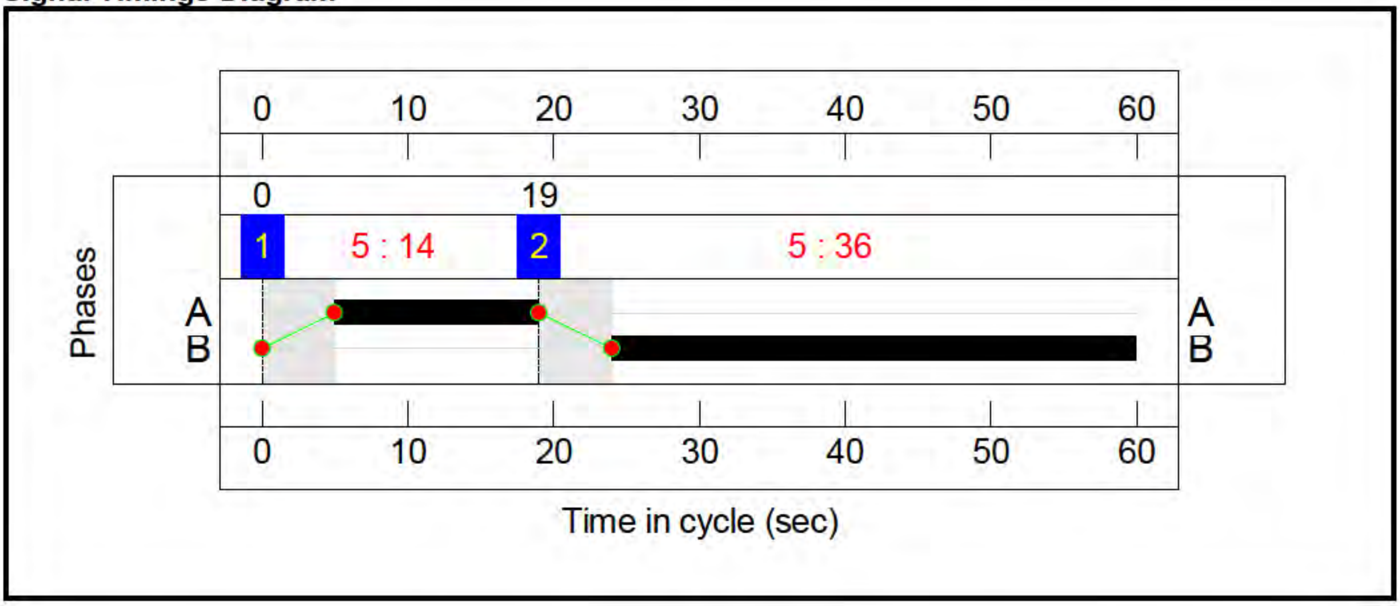
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	14	36
Change Point	0	19

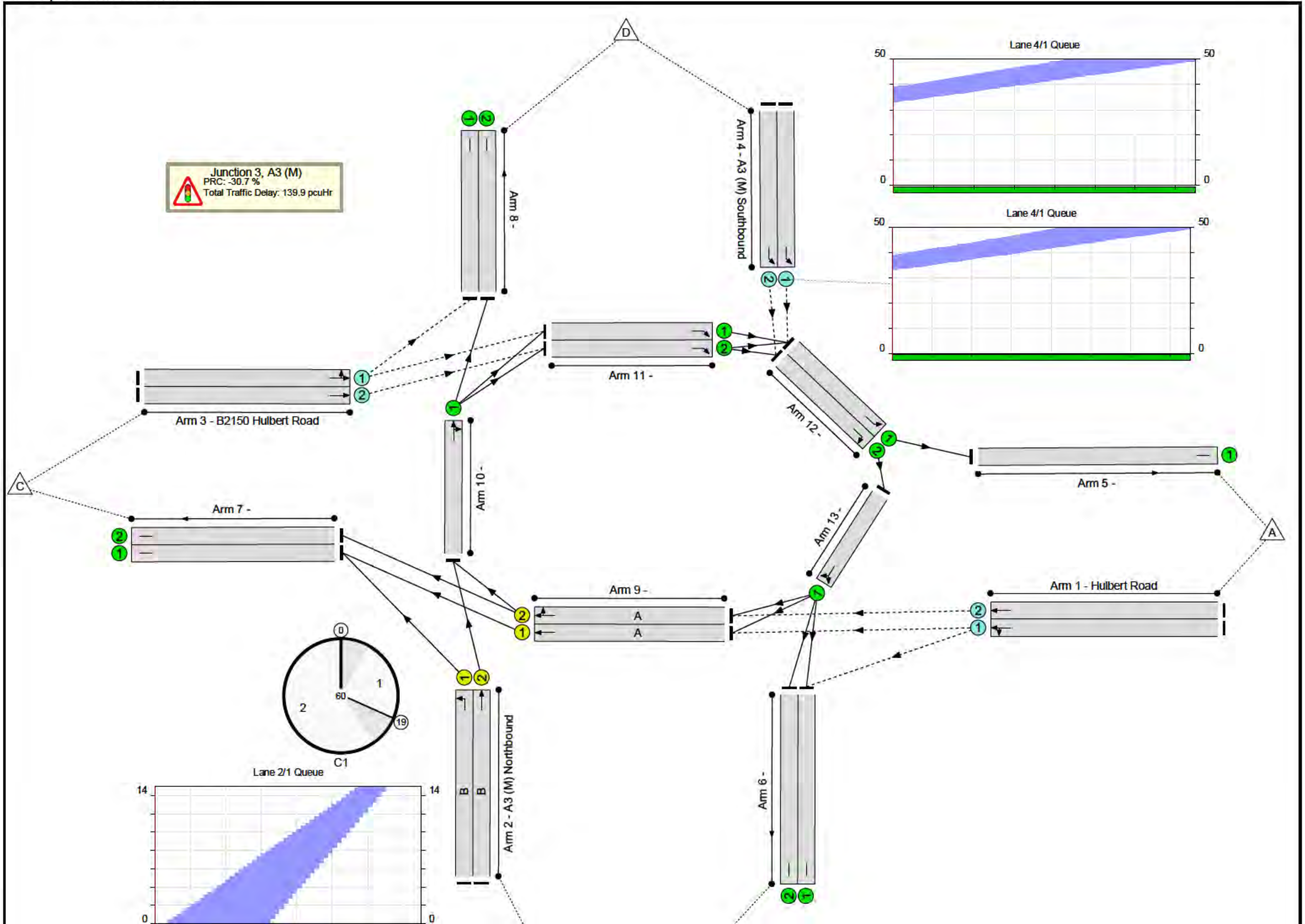
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	117.6%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	117.6%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	330	1990	672	49.1%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	379	2130	672	56.4%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	36	-	1233	1997	1231	100.1%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	36	-	19	2091	1289	1.5%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	677	1992	886	76.4%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	727	2119	924	78.7%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	1159	1939	985	117.6%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	290	2094	742	39.1%
5/1		U	N/A	N/A	-		-	-	-	1236	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1693	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	280	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	643	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	14	-	460	1992	498	92.4%
9/2	Ahead Right	U	N/A	N/A	A		1	14	-	491	2121	530	92.6%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	44	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1236	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	993	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	993	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3388**	**0**	**0**	**17.2**	**122.7**	**0.0**	**139.9**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3388**	**0**	**0**	**17.2**	**122.7**	**0.0**	**139.9**	**-**	**-**	**-**	**-**
1/1	330	330	330	0	0	0.0	0.5	-	0.5	5.2	0.0	0.5	0.5
1/2	379	379	379	0	0	0.0	0.6	-	0.6	6.1	0.0	0.6	0.6
2/1	1233	1231	-	-	-	4.0	17.9	-	21.9	64.0	20.6	17.9	38.5
2/2	19	19	-	-	-	0.0	0.0	-	0.0	6.0	0.1	0.0	0.1
3/1	677	677	677	0	0	0.1	1.6	-	1.7	8.9	3.2	1.6	4.8
3/2	727	727	727	0	0	0.0	1.8	-	1.8	9.0	1.6	1.8	3.4
4/1	1159	985	985	0	0	7.3	90.1	-	97.4	302.5	57.9	90.1	148.1
4/2	290	290	290	0	0	0.0	0.3	-	0.3	4.0	0.0	0.3	0.3
5/1	1062	1062	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1691	1691	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	280	280	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	643	643	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	460	460	-	-	-	2.8	4.8	-	7.6	59.7	7.4	4.8	12.2
9/2	491	491	-	-	-	3.0	5.0	-	8.0	58.5	7.9	5.0	12.9
10/1	230	230	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	44	44	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1062	1062	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	993	993	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	993	993	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -11.2 Total Delay for Signalled Lanes (pcuHr): 37.58 Cycle Time (s): 60
PRC Over All Lanes (%): -30.7 Total Delay Over All Lanes(pcuHr): 139.89

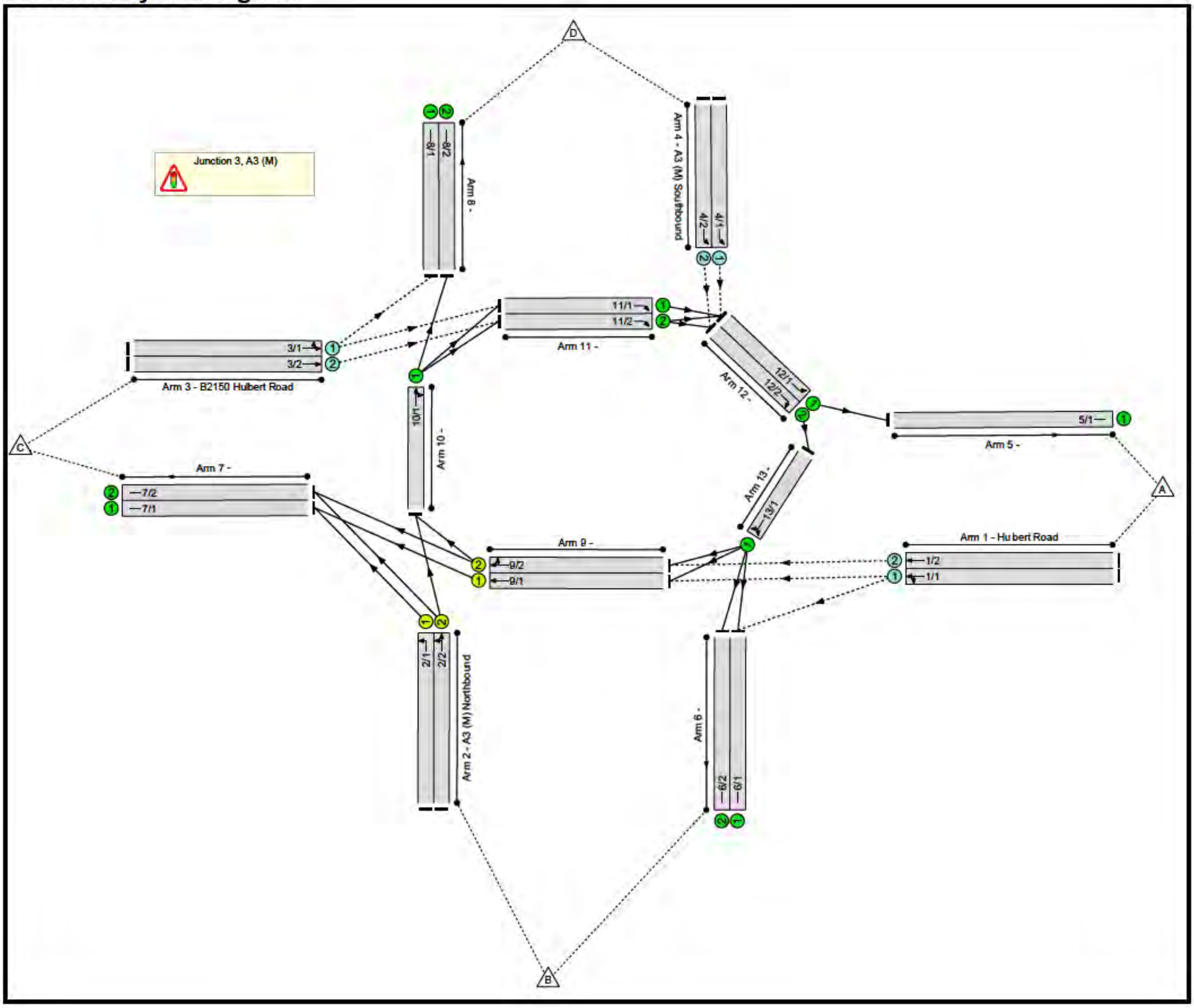
Full Input Data And Results

Full Input Data And Results
Full Input Data And Results

User and Project Details

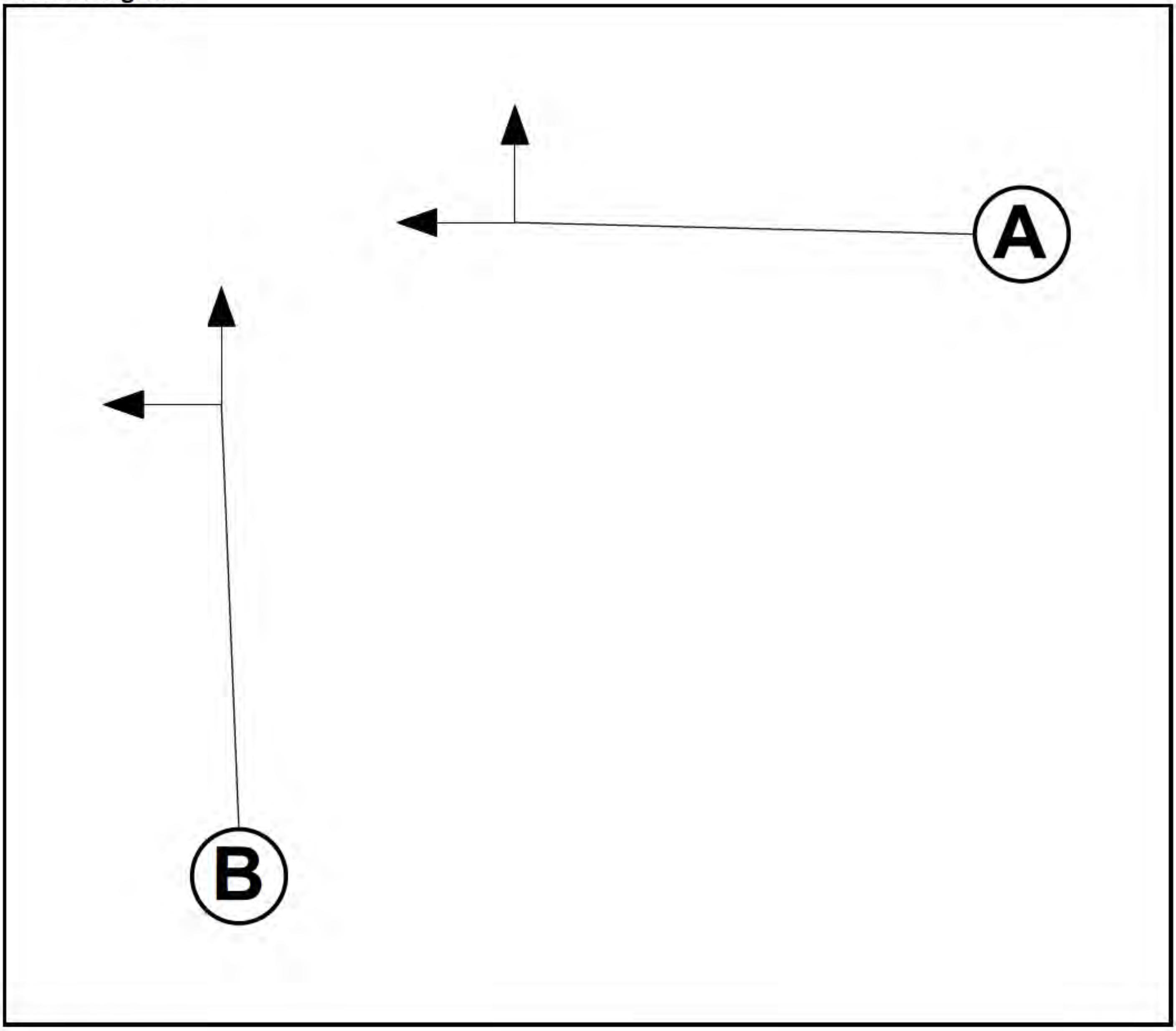
Project:	
Title:	
Location:	
Additional detail:	
File name:	A3 (M) J3 - Permitted left turn from offside lane of A3 (south) approach.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

Phase Intergreens Matrix

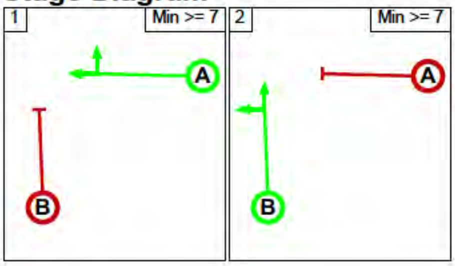
		Starting Phase	
		A	B
Terminating Phase	A		5
	B	5	

Phases in Stage

Stage No.	Phases in Stage
1	A
2	B

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Junction 3, A3 (M)												
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Hulbert Road)	6/1 (Left)	1000	0	13/1	0.33	All	-	-	-	-	-
	9/1 (Ahead)	1000	0	13/1	0.33	All					
1/2 (Hulbert Road)	9/2 (Ahead)	1000	0	13/1	0.33	All	-	-	-	-	-
3/1 (B2150 Hulbert Road)	8/1 (Left)	1000	0	10/1	0.33	To 8/2 (Ahead)	-	-	-	-	-
	11/1 (Ahead)	1000	0	10/1	1.09	To 8/2 (Ahead) To 11/1 (Right)					
3/2 (B2150 Hulbert Road)	11/2 (Ahead)	1000	0	10/1	0.33	All	-	-	-	-	-
4/1 (A3 (M) Southbound)	12/1 (Left)	1000	0	11/1	0.33	All	-	-	-	-	-
4/2 (A3 (M) Southbound)	12/2 (Left)	1000	0	11/2	0.33	All	-	-	-	-	-
				11/1	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: Junction 3, A3 (M)												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 6 Left	Inf
											Arm 9 Ahead	Inf
1/2 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	N	Arm 9 Ahead	Inf
2/1 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.83	0.00	Y	Arm 7 Left	5431.00
2/2 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.61	0.00	N	Arm 7 Left	Inf
											Arm 10 Ahead	126.00
3/1 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.81	0.00	Y	Arm 8 Left	645.00
											Arm 11 Ahead	Inf
3/2 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.90	0.00	N	Arm 11 Ahead	122.00
4/1 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.48	0.00	Y	Arm 12 Left	122.00
4/2 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.58	0.00	N	Arm 12 Left	164.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U	A	2	3	20.9	Geom	-	4.04	0.00	Y	Arm 7 Ahead	111.00
9/2	U	A	2	3	20.9	Geom	-	4.00	0.00	N	Arm 7 Ahead	127.00
											Arm 10 Right	70.00
10/1	U		2	3	19.1	Inf	-	-	-	-	-	-
11/1	U		2	3	27.0	Inf	-	-	-	-	-	-
11/2	U		2	3	27.0	Inf	-	-	-	-	-	-
12/1	U		2	3	15.7	Inf	-	-	-	-	-	-
12/2	U		2	3	15.7	Inf	-	-	-	-	-	-

13/1	U		2	3	7.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2026 DM AM'	08:00	09:00	01:00	
2: '2026 DM PM'	17:00	18:00	01:00	
3: '2026 DS1 AM'	08:00	09:00	01:00	
4: '2026 DS1 PM'	17:00	18:00	01:00	
5: '2026 DS2 AM'	08:00	09:00	01:00	
6: '2026 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2026 DM AM' (FG1: '2026 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	257	404	676
	B	42	0	1063	0	1105
	C	853	399	0	574	1826
	D	733	0	252	0	985
	Tot.	1628	414	1572	978	4592

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2026 DM AM
Junction: Junction 3, A3 (M)	
1/1	244
1/2	432
2/1	526
2/2	579
3/1	842
3/2	984
4/1	733
4/2	252
5/1	1628
6/1	215
6/2	199
7/1	969
7/2	603
8/1	574
8/2	404
9/1	443
9/2	470
10/1	446
11/1	289
11/2	1005
12/1	1628
12/2	651
13/1	651

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	6.1 %	1990	1990
				Arm 9 Ahead	Inf	93.9 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	92.7 %	2114	2114
				Arm 10 Ahead	126.00	7.3 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	68.2 %	1993	1993
				Arm 11 Ahead	Inf	31.8 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	14.0 %	2113	2113
				Arm 10 Right	70.00	86.0 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: '2026 DM PM' (FG2: '2026 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	48	464	141	653
	B	19	0	1141	0	1160
	C	52	703	0	818	1573
	D	1150	0	314	0	1464
	Tot.	1221	751	1919	959	4850

Traffic Lane Flows

Lane	Scenario 2: 2026 DM PM
Junction: Junction 3, A3 (M)	
1/1	327
1/2	326
2/1	563
2/2	597
3/1	818
3/2	755
4/1	1150
4/2	314
5/1	1221
6/1	400
6/2	351
7/1	997
7/2	922
8/1	818
8/2	141
9/1	434
9/2	485
10/1	160
11/1	10
11/2	764
12/1	1221
12/2	1017
13/1	1017

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	14.7 %	1990	1990
				Arm 9 Ahead	Inf	85.3 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	96.8 %	2115	2115
				Arm 10 Ahead	126.00	3.2 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	100.0 %	1991	1991
				Arm 11 Ahead	Inf	0.0 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	70.9 %	2124	2124
				Arm 10 Right	70.00	29.1 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: '2026 DS1 AM' (FG3: '2026 DS1 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	290	415	720
	B	42	0	1160	0	1202
	C	851	358	0	603	1812
	D	741	0	223	0	964
	Tot.	1634	373	1673	1018	4698

Traffic Lane Flows

Lane	Scenario 3: 2026 DS1 AM
Junction: Junction 3, A3 (M)	
1/1	276
1/2	444
2/1	574
2/2	628
3/1	837
3/2	975
4/1	741
4/2	223
5/1	1634
6/1	194
6/2	179
7/1	1025
7/2	648
8/1	603
8/2	415
9/1	451
9/2	477
10/1	457
11/1	255
11/2	996
12/1	1634
12/2	581
13/1	581

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	5.4 %	1990	1990
				Arm 9 Ahead	Inf	94.6 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	93.3 %	2114	2114
				Arm 10 Ahead	126.00	6.7 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	72.0 %	1993	1993
				Arm 11 Ahead	Inf	28.0 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	13.0 %	2112	2112
				Arm 10 Right	70.00	87.0 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 4: '2026 DS1 PM' (FG4: '2026 DS1 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	48	457	211	716
	B	19	0	1226	0	1245
	C	56	703	0	641	1400
	D	1155	0	292	0	1447
	Tot.	1230	751	1975	852	4808

Traffic Lane Flows

Lane	Scenario 4: 2026 DS1 PM
Junction: Junction 3, A3 (M)	
1/1	358
1/2	358
2/1	598
2/2	647
3/1	684
3/2	716
4/1	1155
4/2	292
5/1	1230
6/1	400
6/2	351
7/1	1057
7/2	918
8/1	641
8/2	211
9/1	459
9/2	501
10/1	230
11/1	53
11/2	725
12/1	1230
12/2	995
13/1	995

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	13.4 %	1990	1990
				Arm 9 Ahead	Inf	86.6 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	97.1 %	2115	2115
				Arm 10 Ahead	126.00	2.9 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	93.7 %	1992	1992
				Arm 11 Ahead	Inf	6.3 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	57.9 %	2121	2121
				Arm 10 Right	70.00	42.1 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 5: '2026 DS2 AM' (FG5: '2026 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	289	416	720
	B	42	0	1154	0	1196
	C	849	360	0	604	1813
	D	740	0	224	0	964
	Tot.	1631	375	1667	1020	4693

Traffic Lane Flows

Lane	Scenario 5: 2026 DS2 AM
Junction: Junction 3, A3 (M)	
1/1	274
1/2	446
2/1	571
2/2	625
3/1	838
3/2	975
4/1	740
4/2	224
5/1	1631
6/1	195
6/2	180
7/1	1022
7/2	645
8/1	604
8/2	416
9/1	451
9/2	478
10/1	458
11/1	255
11/2	996
12/1	1631
12/2	584
13/1	584

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	5.5 %	1990	1990
				Arm 9 Ahead	Inf	94.5 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	93.3 %	2114	2114
				Arm 10 Ahead	126.00	6.7 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	72.1 %	1993	1993
				Arm 11 Ahead	Inf	27.9 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	13.0 %	2112	2112
				Arm 10 Right	70.00	87.0 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 6: '2026 DS2 PM' (FG6: '2026 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	48	450	211	709
	B	19	0	1233	0	1252
	C	58	703	0	643	1404
	D	1159	0	290	0	1449
	Tot.	1236	751	1973	854	4814

Traffic Lane Flows

Lane	Scenario 6: 2026 DS2 PM
Junction: Junction 3, A3 (M)	
1/1	354
1/2	355
2/1	601
2/2	651
3/1	685
3/2	719
4/1	1159
4/2	290
5/1	1236
6/1	400
6/2	351
7/1	1056
7/2	917
8/1	643
8/2	211
9/1	455
9/2	496
10/1	230
11/1	52
11/2	728
12/1	1236
12/2	993
13/1	993

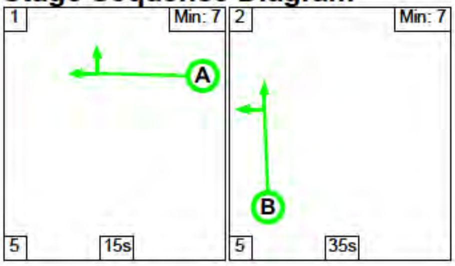
Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	13.6 %	1990	1990
				Arm 9 Ahead	Inf	86.4 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	97.1 %	2115	2115
				Arm 10 Ahead	126.00	2.9 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	93.9 %	1992	1992
				Arm 11 Ahead	Inf	6.1 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2	4.00	0.00	N	Arm 7 Ahead	127.00	57.5 %	2121	2121
				Arm 10 Right	70.00	42.5 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 1: '2026 DM AM' (FG1: '2026 DM AM', Plan 1: 'Network Control Plan 1')

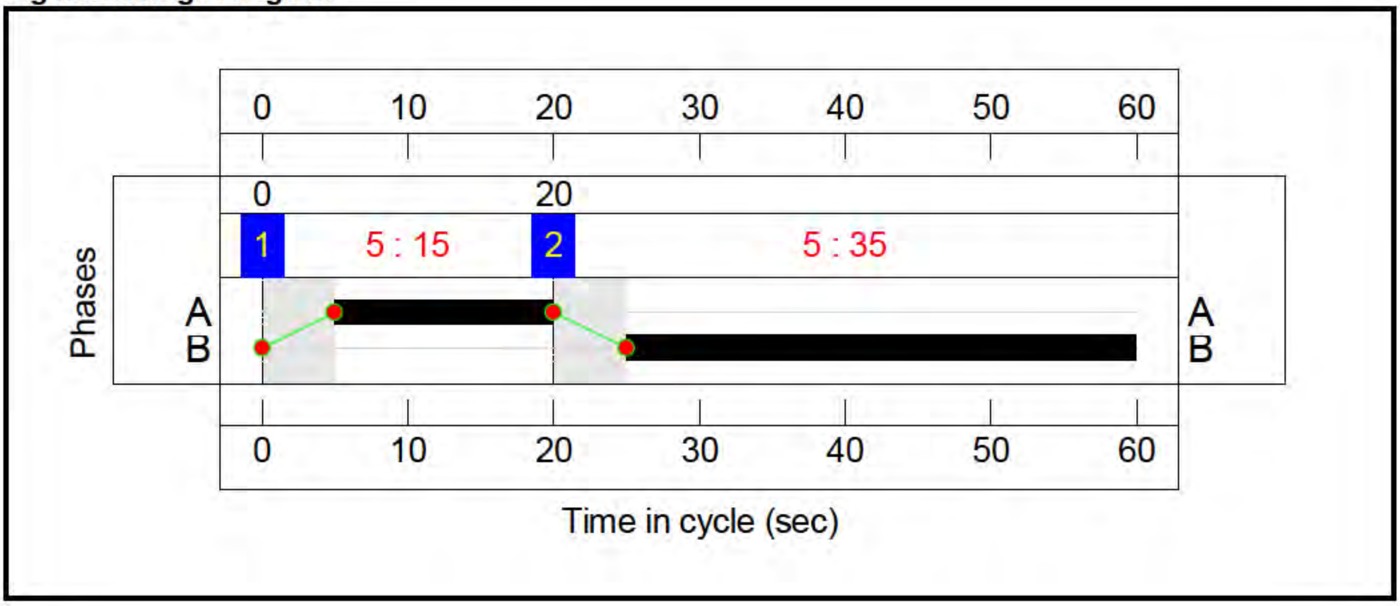
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	15	35
Change Point	0	20

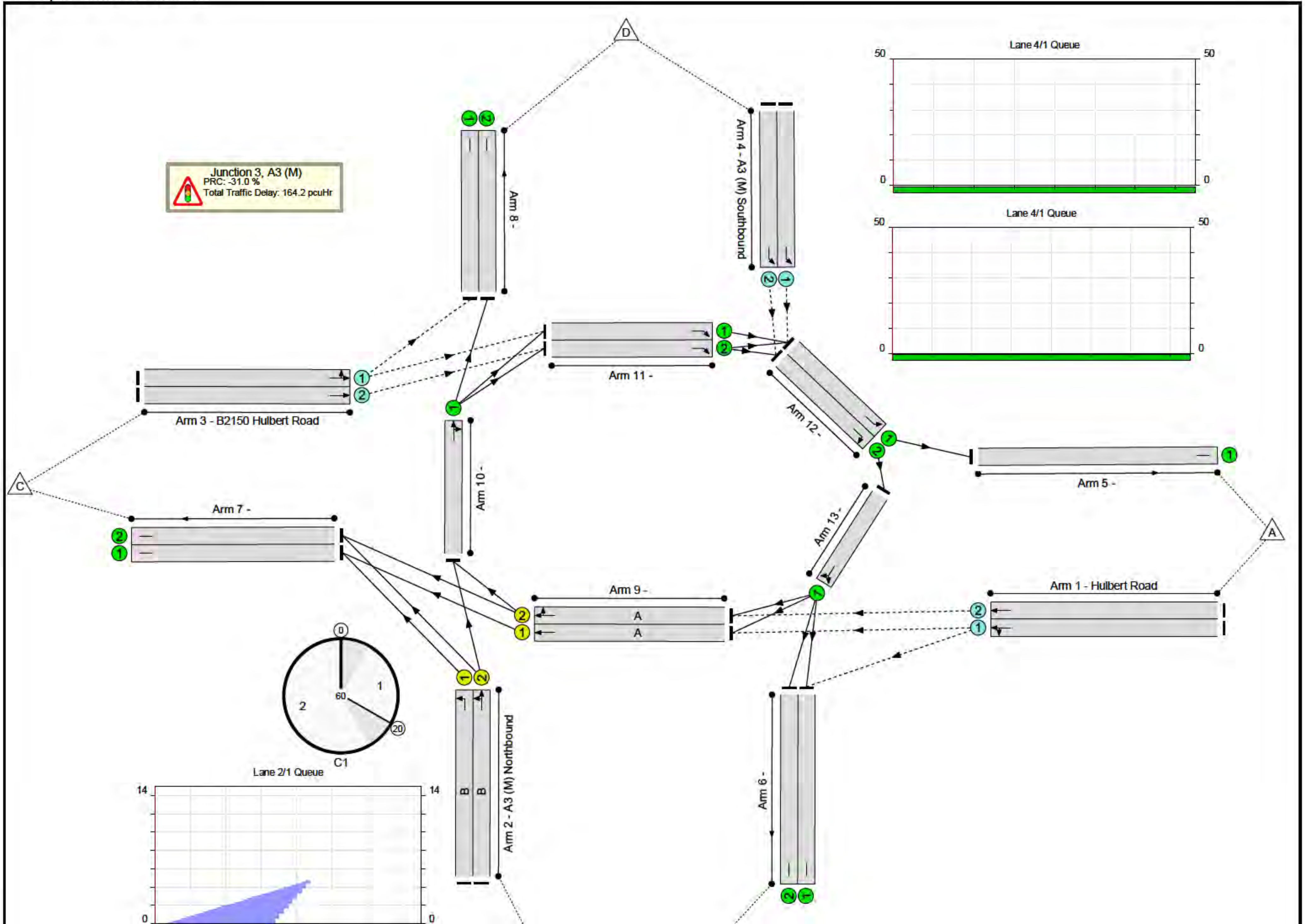
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	117.9%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	117.9%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	244	1990	802	30.4%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	432	2130	802	53.8%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	35	-	526	1997	1198	43.9%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	35	-	579	2114	1268	45.6%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	842	1993	714	117.9%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	984	2119	853	115.4%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	733	1939	918	79.9%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	252	2094	630	40.0%
5/1		U	N/A	N/A	-		-	-	-	1628	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	215	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	199	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	969	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	603	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	574	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	15	-	443	1992	531	83.4%
9/2	Ahead Right	U	N/A	N/A	A		1	15	-	470	2113	563	83.4%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	446	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	289	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1628	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%

Full Input Data And Results

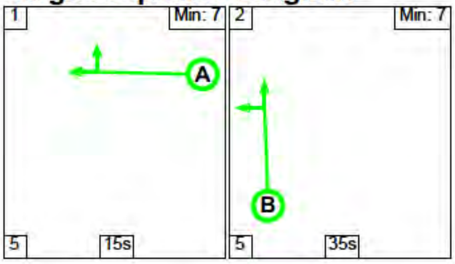
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3228**	**0**	**0**	**19.2**	**145.0**	**0.0**	**164.2**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3228**	**0**	**0**	**19.2**	**145.0**	**0.0**	**164.2**	**-**	**-**	**-**	**-**
1/1	244	244	244	0	0	0.0	0.2	-	0.2	3.2	0.0	0.2	0.2
1/2	432	432	432	0	0	0.0	0.6	-	0.6	4.8	0.0	0.6	0.6
2/1	526	526	-	-	-	1.0	0.4	-	1.3	9.2	4.7	0.4	5.1
2/2	579	579	-	-	-	1.1	0.4	-	1.5	9.2	5.3	0.4	5.7
3/1	842	714	714	0	0	6.3	67.0	-	73.3	313.6	38.1	67.0	105.2
3/2	984	853	853	0	0	5.6	69.3	-	74.9	274.0	44.6	69.3	113.8
4/1	733	733	733	0	0	0.0	1.9	-	1.9	9.5	0.0	1.9	1.9
4/2	252	252	252	0	0	0.0	0.3	-	0.3	4.8	0.0	0.3	0.3
5/1	1509	1509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	188	188	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	172	172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	969	969	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	603	603	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	487	487	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	443	443	-	-	-	2.6	2.4	-	4.9	40.1	6.9	2.4	9.3
9/2	470	470	-	-	-	2.7	2.4	-	5.1	39.1	7.3	2.4	9.7
10/1	446	446	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	248	248	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	874	874	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1509	1509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	598	598	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	598	598	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 7.9 Total Delay for Signalled Lanes (pcuHr): 12.86 Cycle Time (s): 60
PRC Over All Lanes (%): -31.0 Total Delay Over All Lanes(pcuHr): 164.18

Full Input Data And Results

Full Input Data And Results
Scenario 2: '2026 DM PM' (FG2: '2026 DM PM', Plan 1: 'Network Control Plan 1')

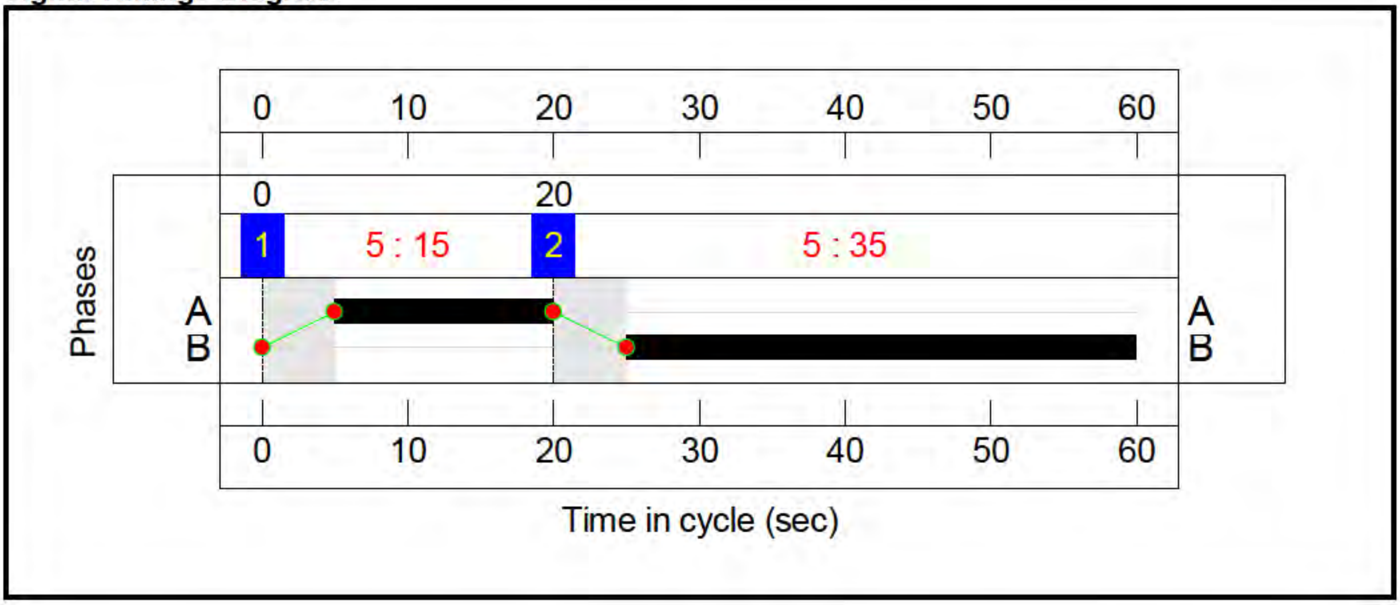
Stage Sequence Diagram



Stage Timings

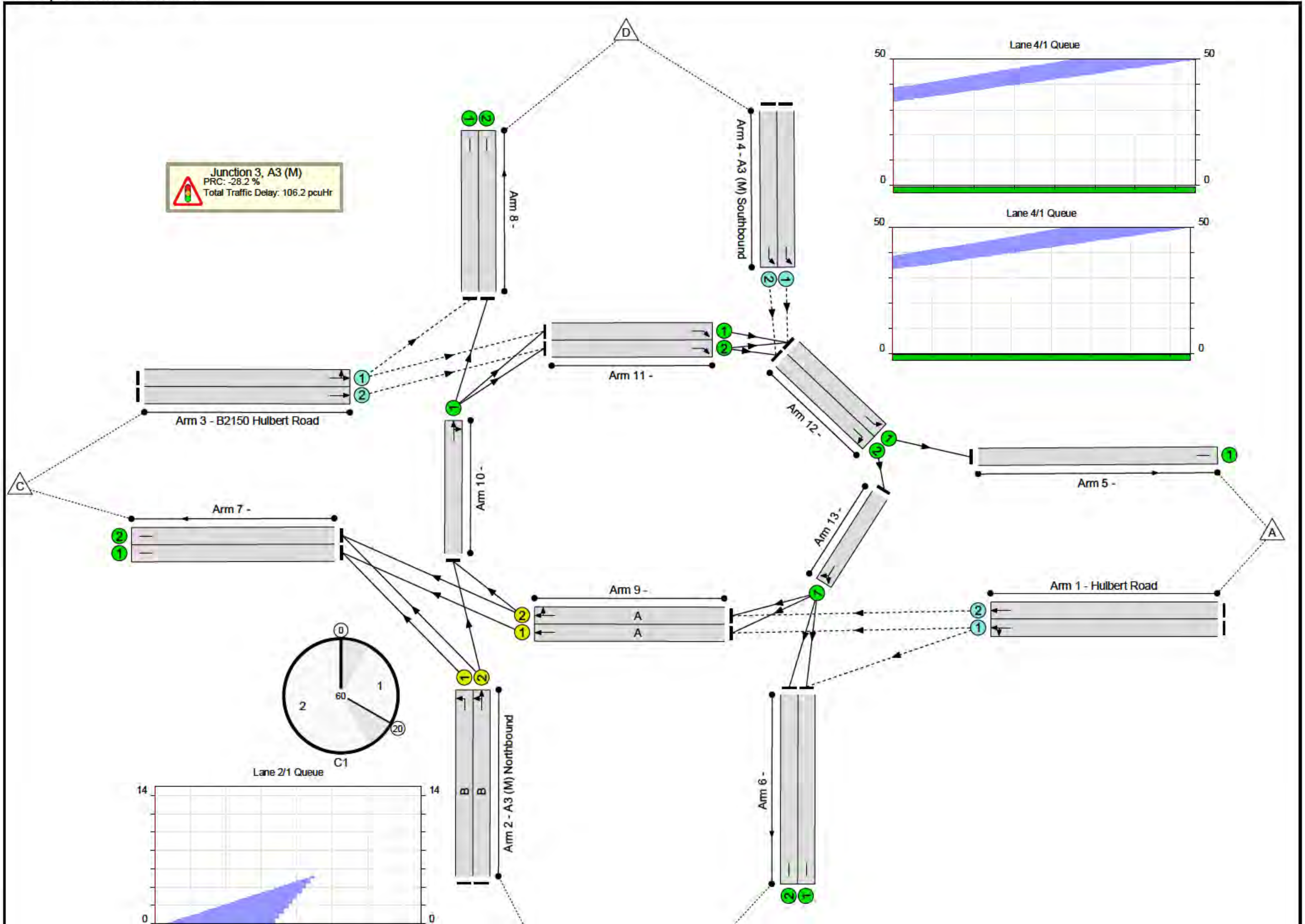
Stage	1	2
Duration	15	35
Change Point	0	20

Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	115.4%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	115.4%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	327	1990	664	49.2%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	326	2130	664	49.1%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	35	-	563	1997	1198	47.0%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	35	-	597	2115	1269	47.0%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	818	1991	953	85.8%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	755	2119	947	79.7%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	1150	1939	996	115.4%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	314	2094	744	42.2%
5/1		U	N/A	N/A	-		-	-	-	1221	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	997	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	922	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	818	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	141	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	15	-	434	1992	531	81.7%
9/2	Ahead Right	U	N/A	N/A	A		1	15	-	485	2124	566	85.6%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	160	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	764	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1221	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1017	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1017	Inf	Inf	0.0%

Full Input Data And Results

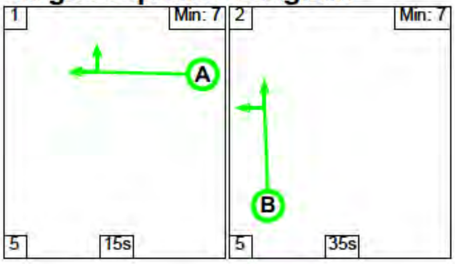
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3536**	**0**	**0**	**13.9**	**92.3**	**0.0**	**106.2**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3536**	**0**	**0**	**13.9**	**92.3**	**0.0**	**106.2**	**-**	**-**	**-**	**-**
1/1	327	327	327	0	0	0.0	0.5	-	0.5	5.3	0.0	0.5	0.5
1/2	326	326	326	0	0	0.0	0.5	-	0.5	5.3	0.0	0.5	0.5
2/1	563	563	-	-	-	1.0	0.4	-	1.5	9.5	5.2	0.4	5.6
2/2	597	597	-	-	-	1.1	0.4	-	1.6	9.4	5.5	0.4	5.9
3/1	818	818	818	0	0	0.0	2.9	-	2.9	12.8	1.8	2.9	4.7
3/2	755	755	755	0	0	0.0	1.9	-	1.9	9.2	0.0	1.9	1.9
4/1	1150	996	996	0	0	6.4	80.4	-	86.8	271.7	57.5	80.4	137.9
4/2	314	314	314	0	0	0.0	0.4	-	0.4	4.2	0.0	0.4	0.4
5/1	1067	1067	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	997	997	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	922	922	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	141	141	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	434	434	-	-	-	2.5	2.1	-	4.6	38.4	6.8	2.1	8.9
9/2	485	485	-	-	-	2.8	2.8	-	5.6	41.6	7.7	2.8	10.5
10/1	160	160	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	764	764	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1067	1067	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1017	1017	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1017	1017	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 5.1 Total Delay for Signalled Lanes (pcuHr): 13.27 Cycle Time (s): 60
PRC Over All Lanes (%): -28.2 Total Delay Over All Lanes(pcuHr): 106.22

Full Input Data And Results

Full Input Data And Results
Scenario 3: '2026 DS1 AM' (FG3: '2026 DS1 AM', Plan 1: 'Network Control Plan 1')

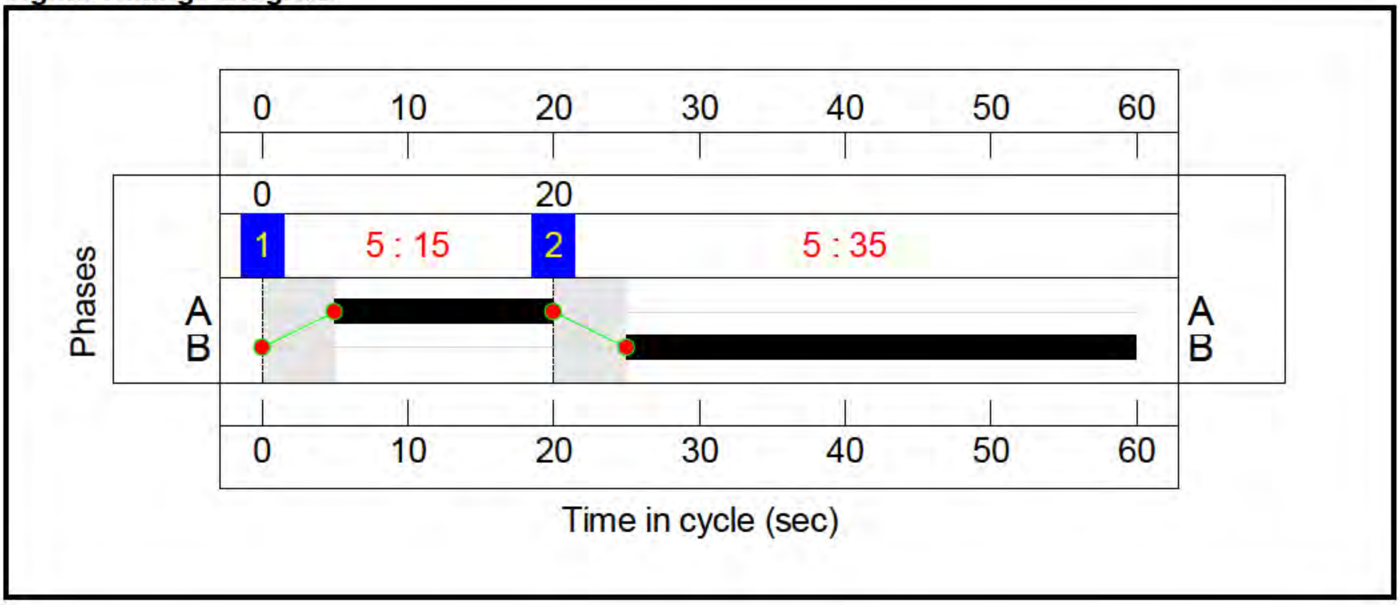
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	15	35
Change Point	0	20

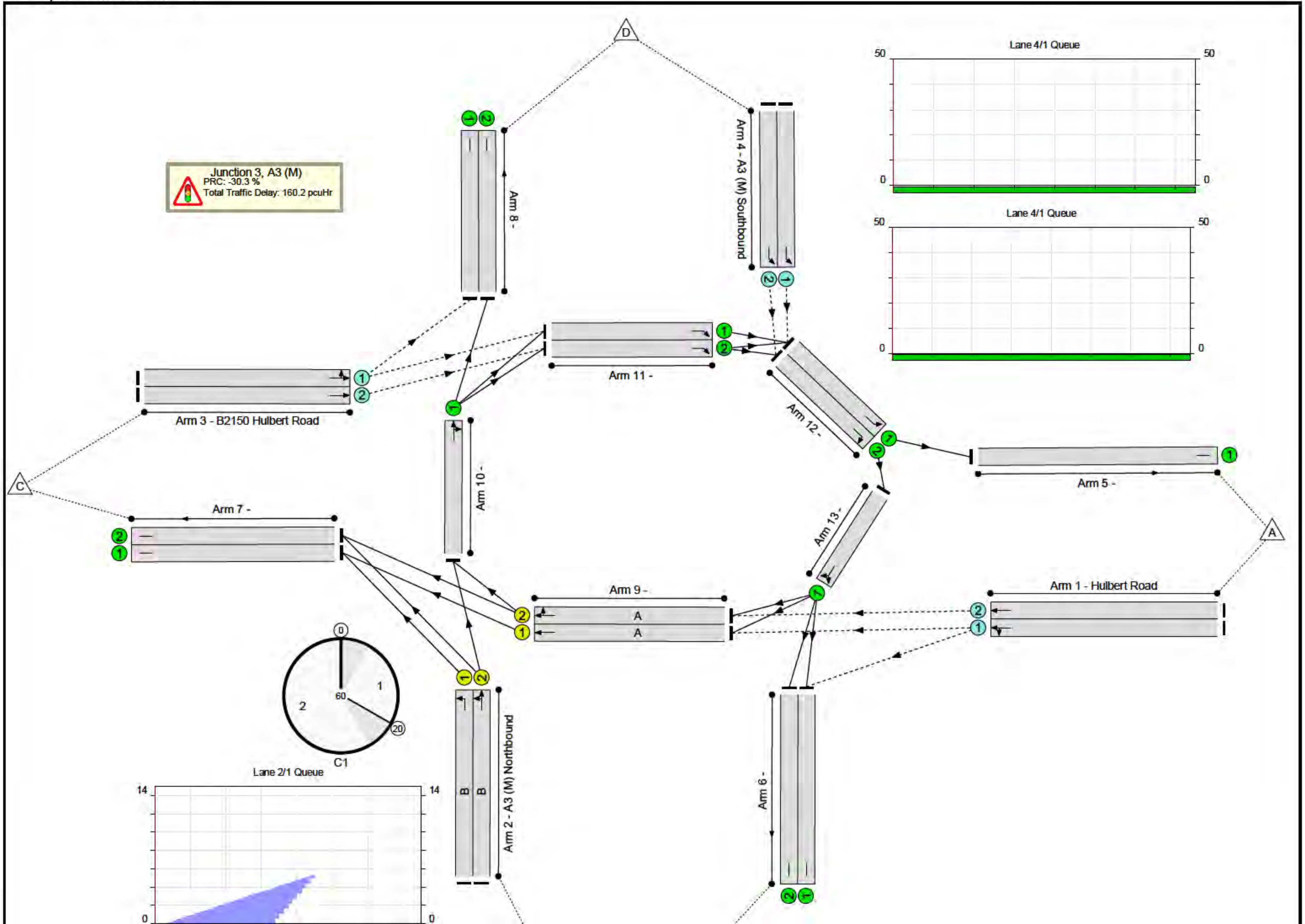
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**117.3%**
Junction 3, A3 (M)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**117.3%**
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	276	1990	823	33.5%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	444	2130	823	53.9%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	35	-	574	1997	1198	47.9%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	35	-	628	2114	1268	49.5%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	837	1993	713	117.3%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	975	2119	849	114.9%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	741	1939	927	79.9%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	223	2094	640	34.8%
5/1		U	N/A	N/A	-		-	-	-	1634	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1025	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	648	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	603	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	15	-	451	1992	531	84.9%
9/2	Ahead Right	U	N/A	N/A	A		1	15	-	477	2112	563	84.7%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	457	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	255	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	996	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1634	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**3246**	**0**	**0**	**19.2**	**140.9**	**0.0**	**160.2**	-	-	-	-
Junction 3, A3 (M)	-	-	**3246**	**0**	**0**	**19.2**	**140.9**	**0.0**	**160.2**	-	-	-	-
1/1	276	276	276	0	0	0.0	0.3	-	0.3	3.3	0.0	0.3	0.3
1/2	444	444	444	0	0	0.0	0.6	-	0.6	4.7	0.0	0.6	0.6
2/1	574	574	-	-	-	1.1	0.5	-	1.5	9.6	5.3	0.5	5.7
2/2	628	628	-	-	-	1.2	0.5	-	1.7	9.6	5.9	0.5	6.4
3/1	837	713	713	0	0	6.2	65.0	-	71.2	306.0	37.9	65.0	102.9
3/2	975	849	849	0	0	5.4	66.7	-	72.1	266.3	44.1	66.7	110.8
4/1	741	741	741	0	0	0.0	2.0	-	2.0	9.5	0.0	2.0	2.0
4/2	223	223	223	0	0	0.0	0.3	-	0.3	4.3	0.0	0.3	0.3
5/1	1520	1520	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	171	171	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	156	156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1025	1025	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	648	648	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	514	514	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	451	451	-	-	-	2.6	2.6	-	5.3	41.9	7.0	2.6	9.7
9/2	477	477	-	-	-	2.8	2.6	-	5.4	40.5	7.4	2.6	10.0
10/1	457	457	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	870	870	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1520	1520	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

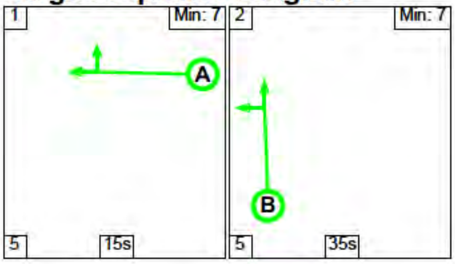
C1 PRC for Signalled Lanes (%): 6.0 Total Delay for Signalled Lanes (pcuHr): 13.84 Cycle Time (s): 60
PRC Over All Lanes (%): -30.3 Total Delay Over All Lanes(pcuHr): 160.17

Full Input Data And Results

Full Input Data And Results

Scenario 4: '2026 DS1 PM' (FG4: '2026 DS1 PM', Plan 1: 'Network Control Plan 1')

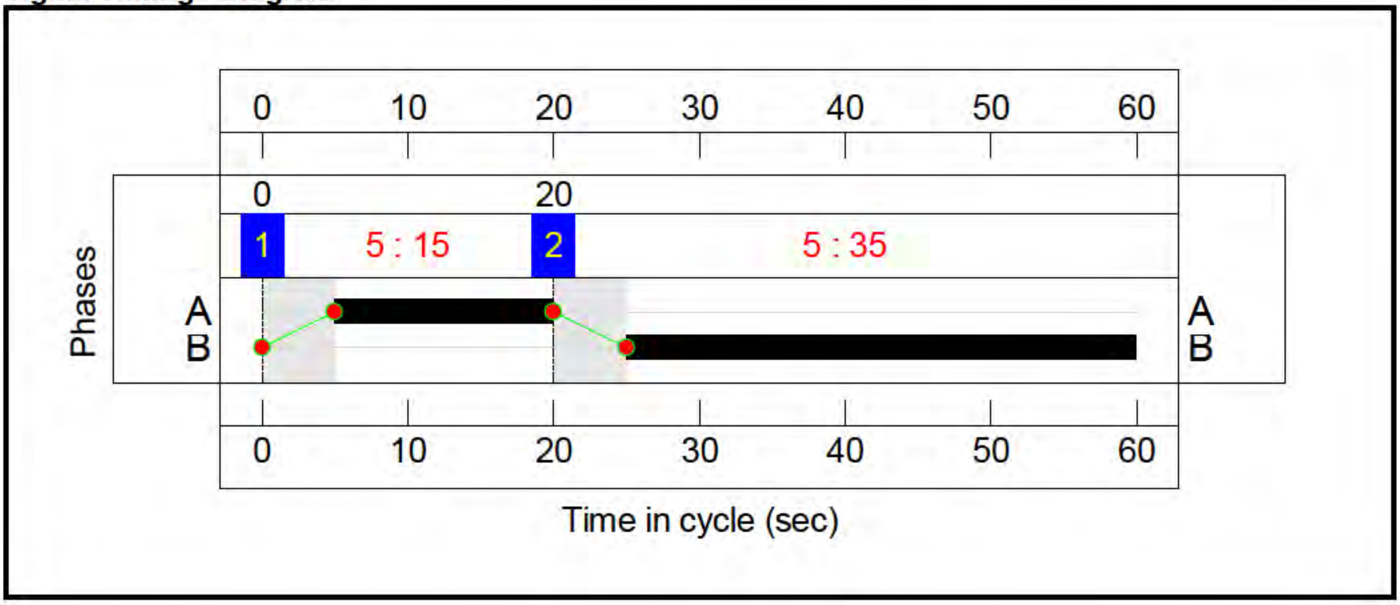
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	15	35
Change Point	0	20

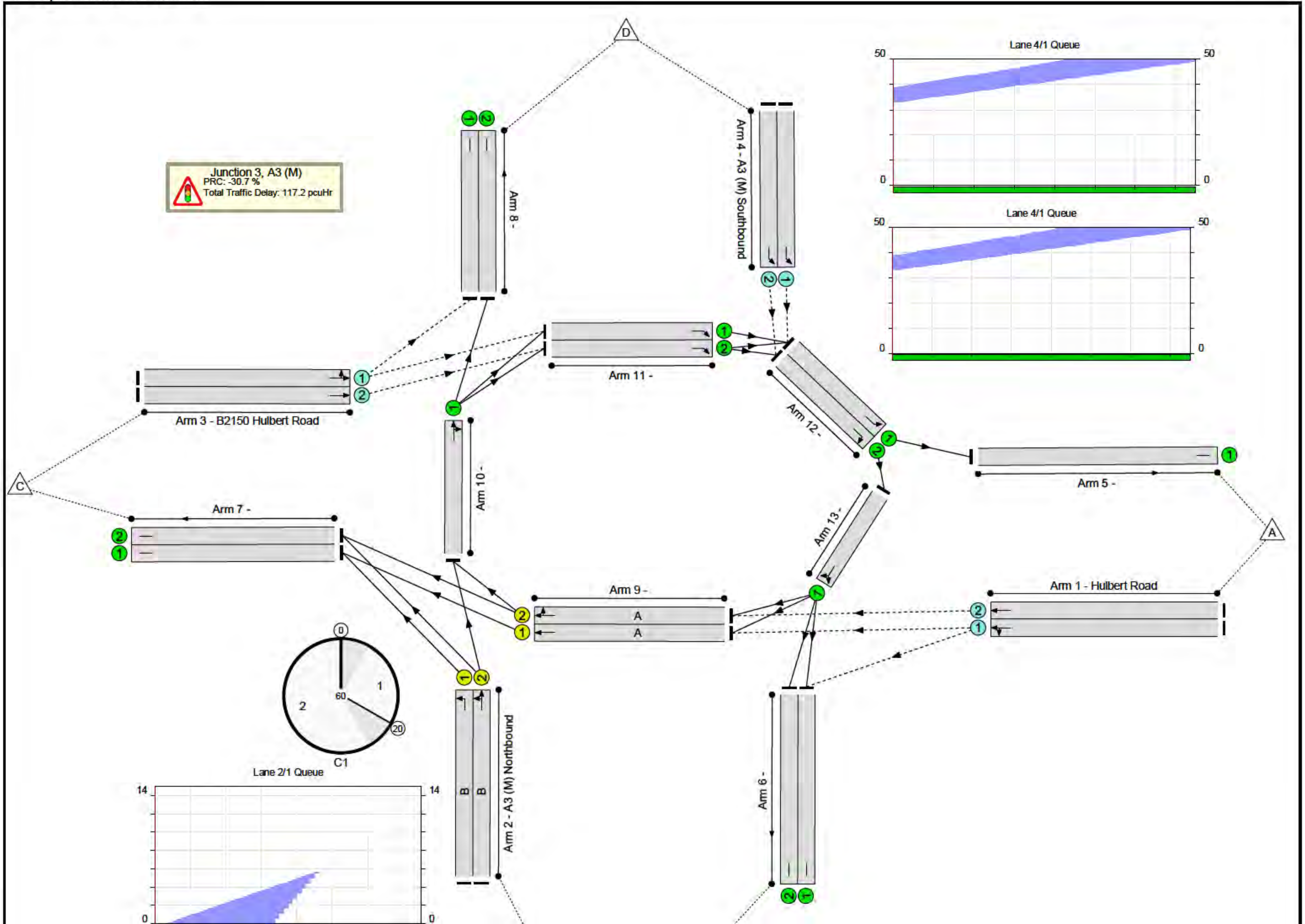
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	117.6%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	117.6%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	358	1990	671	53.3%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	358	2130	671	53.3%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	35	-	598	1997	1198	49.9%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	35	-	647	2115	1269	51.0%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	684	1992	887	77.1%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	716	2119	924	77.5%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	1155	1939	982	117.6%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	292	2094	743	39.3%
5/1		U	N/A	N/A	-		-	-	-	1230	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1057	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	918	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	641	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	15	-	459	1992	531	86.4%
9/2	Ahead Right	U	N/A	N/A	A		1	15	-	501	2121	566	88.6%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	53	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	725	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1230	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	995	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	995	Inf	Inf	0.0%

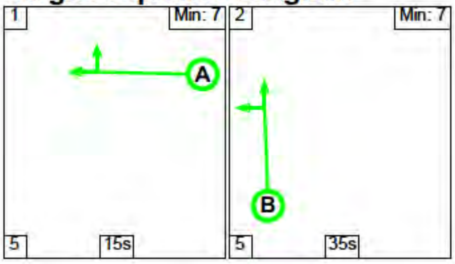
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**3390**	**0**	**0**	**15.3**	**101.9**	**0.0**	**117.2**	-	-	-	-
Junction 3, A3 (M)	-	-	**3390**	**0**	**0**	**15.3**	**101.9**	**0.0**	**117.2**	-	-	-	-
1/1	358	358	358	0	0	0.0	0.6	-	0.6	5.7	0.0	0.6	0.6
1/2	358	358	358	0	0	0.0	0.6	-	0.6	5.7	0.0	0.6	0.6
2/1	598	598	-	-	-	1.1	0.5	-	1.6	9.8	5.6	0.5	6.1
2/2	647	647	-	-	-	1.2	0.5	-	1.8	9.8	6.1	0.5	6.6
3/1	684	684	684	0	0	0.1	1.7	-	1.7	9.1	3.4	1.7	5.1
3/2	716	716	716	0	0	0.0	1.7	-	1.7	8.5	0.6	1.7	2.3
4/1	1155	982	982	0	0	7.2	89.6	-	96.8	301.8	57.7	89.6	147.4
4/2	292	292	292	0	0	0.0	0.3	-	0.3	4.0	0.0	0.3	0.3
5/1	1057	1057	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1057	1057	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	918	918	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	641	641	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	459	459	-	-	-	2.7	2.9	-	5.6	44.0	7.3	2.9	10.2
9/2	501	501	-	-	-	2.9	3.5	-	6.4	46.3	7.9	3.5	11.4
10/1	230	230	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	53	53	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	725	725	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1057	1057	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	995	995	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	995	995	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 1.6 Total Delay for Signalled Lanes (pcuHr): 15.45 Cycle Time (s): 60
PRC Over All Lanes (%): -30.7 Total Delay Over All Lanes(pcuHr): 117.17

Full Input Data And Results

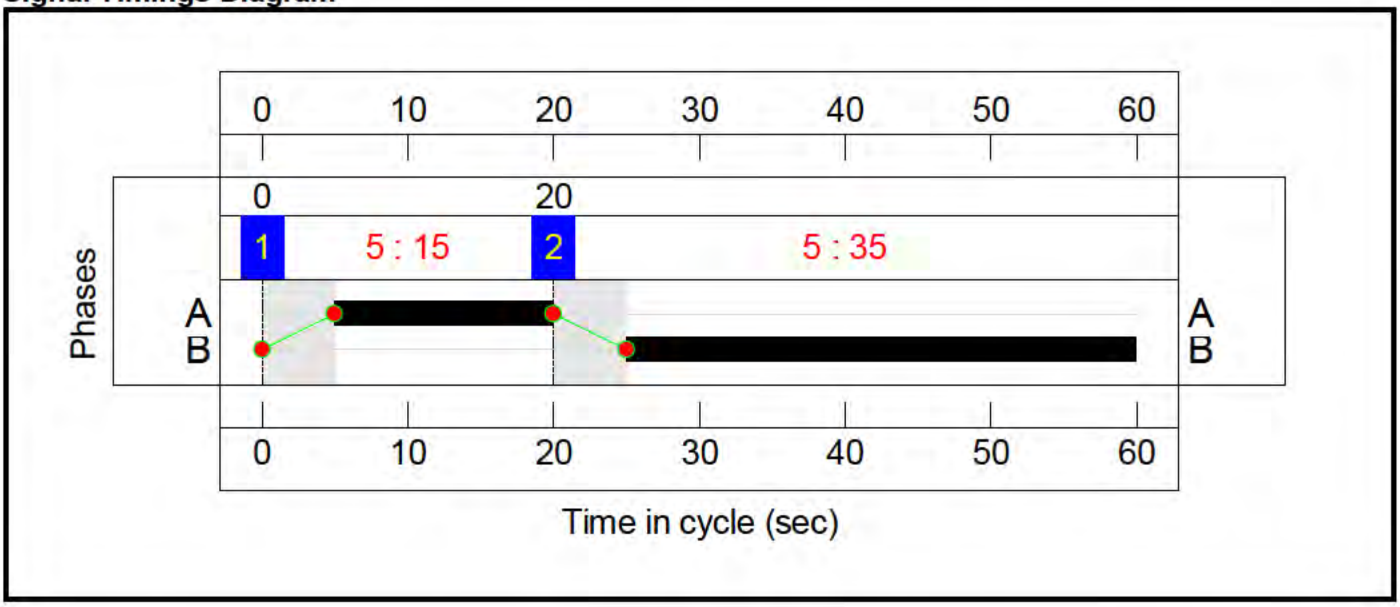
Full Input Data And Results
Scenario 5: '2026 DS2 AM' (FG5: '2026 DS2 AM', Plan 1: 'Network Control Plan 1')
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	15	35
Change Point	0	20

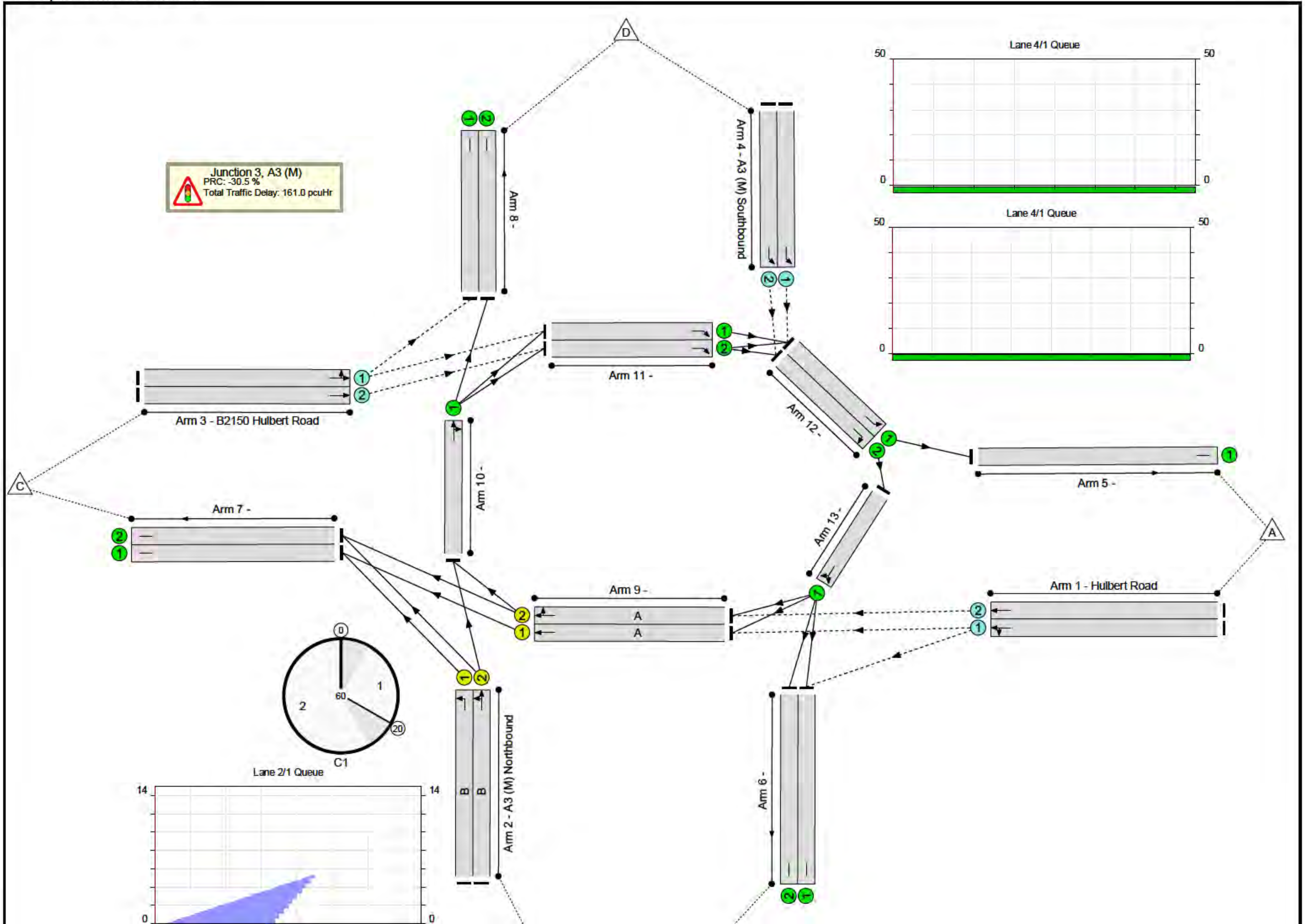
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	117.5%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	117.5%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	274	1990	822	33.3%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	446	2130	822	54.2%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	35	-	571	1997	1198	47.7%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	35	-	625	2114	1268	49.3%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	838	1993	713	117.5%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	975	2119	849	114.9%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	740	1939	927	79.8%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	224	2094	640	35.0%
5/1		U	N/A	N/A	-		-	-	-	1631	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	195	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	180	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1022	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	604	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	416	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	15	-	451	1992	531	84.9%
9/2	Ahead Right	U	N/A	N/A	A		1	15	-	478	2112	563	84.9%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	458	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	255	Inf	Inf	0.0%

Full Input Data And Results

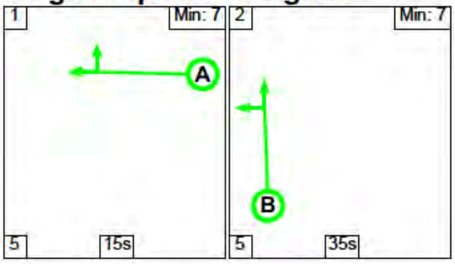
11/2	Ahead	U	N/A	N/A	-		-	-	-	996	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1631	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	584	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	584	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**3246**	**0**	**0**	**19.3**	**141.7**	**0.0**	**161.0**	-	-	-	-
Junction 3, A3 (M)	-	-	**3246**	**0**	**0**	**19.3**	**141.7**	**0.0**	**161.0**	-	-	-	-
1/1	274	274	274	0	0	0.0	0.2	-	0.2	3.3	0.0	0.2	0.2
1/2	446	446	446	0	0	0.0	0.6	-	0.6	4.8	0.0	0.6	0.6
2/1	571	571	-	-	-	1.1	0.5	-	1.5	9.6	5.2	0.5	5.7
2/2	625	625	-	-	-	1.2	0.5	-	1.7	9.6	5.9	0.5	6.4
3/1	838	713	713	0	0	6.2	65.6	-	71.8	308.4	37.9	65.6	103.5
3/2	975	849	849	0	0	5.4	66.9	-	72.3	267.0	44.1	66.9	111.0
4/1	740	740	740	0	0	0.0	1.9	-	1.9	9.4	0.0	1.9	1.9
4/2	224	224	224	0	0	0.0	0.3	-	0.3	4.3	0.0	0.3	0.3
5/1	1516	1516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	172	172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	157	157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1022	1022	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	645	645	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	514	514	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	416	416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	451	451	-	-	-	2.6	2.6	-	5.3	41.9	7.0	2.6	9.7
9/2	478	478	-	-	-	2.8	2.6	-	5.4	40.7	7.4	2.6	10.1
10/1	458	458	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	870	870	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1516	1516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	537	537	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	537	537	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

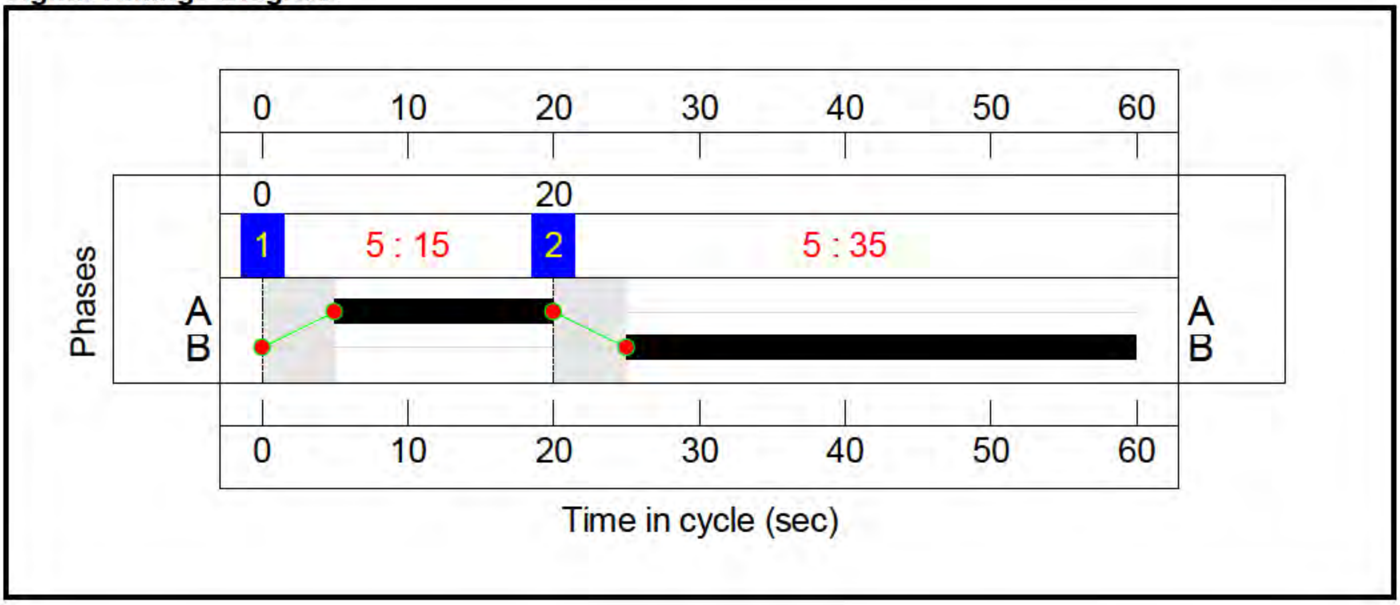
C1 PRC for Signalled Lanes (%): 6.0 Total Delay for Signalled Lanes (pcuHr): 13.85 Cycle Time (s): 60
PRC Over All Lanes (%): -30.5 Total Delay Over All Lanes(pcuHr): 160.99

Full Input Data And Results

Full Input Data And Results
Scenario 6: '2026 DS2 PM' (FG6: '2026 DS2 PM', Plan 1: 'Network Control Plan 1')
Stage Sequence Diagram


Stage Timings

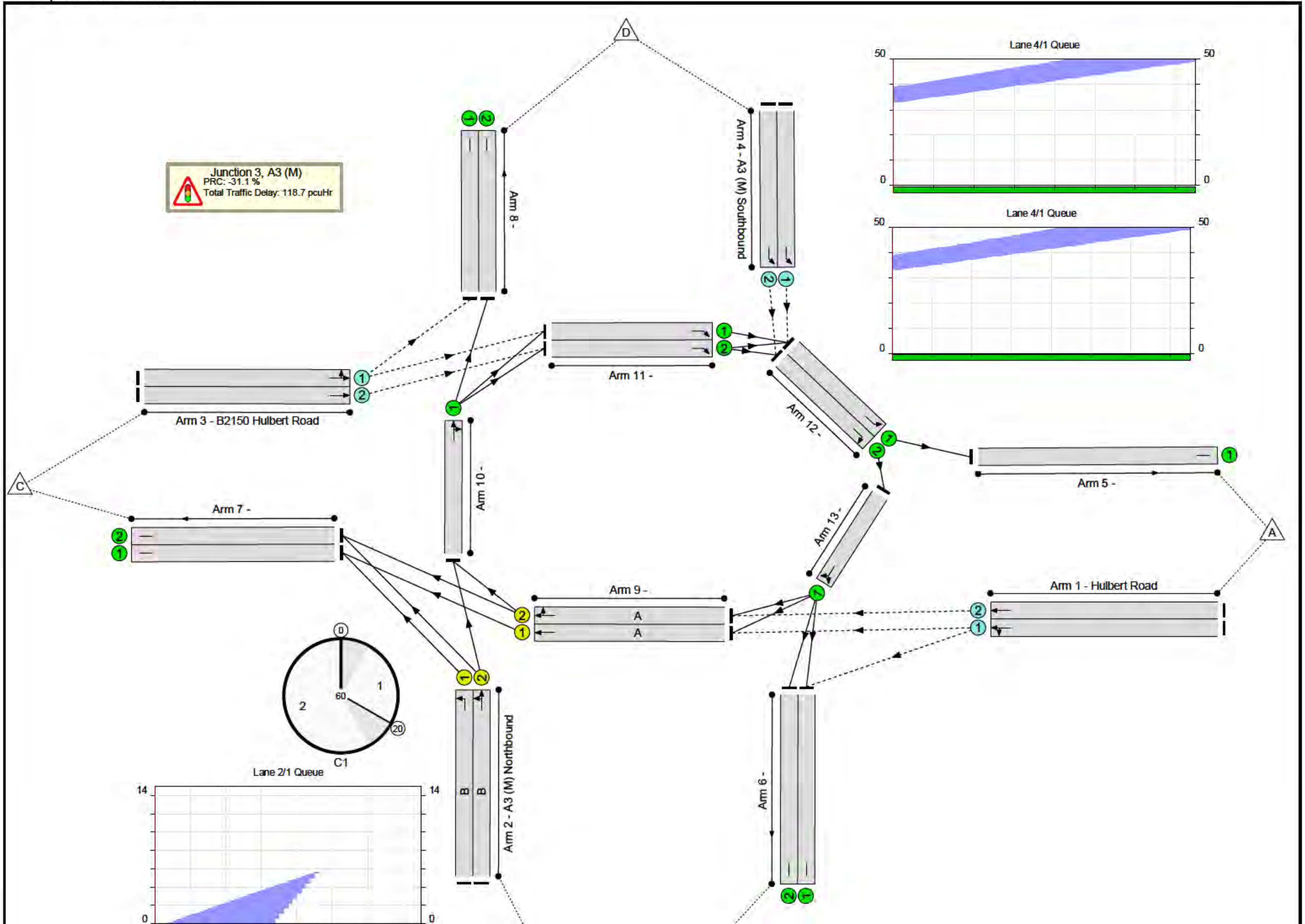
Stage	1	2
Duration	15	35
Change Point	0	20

Signal Timings Diagram


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	118.0%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	118.0%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	354	1990	672	52.7%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	355	2130	672	52.8%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	35	-	601	1997	1198	50.2%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	35	-	651	2115	1269	51.3%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	685	1992	885	77.4%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	719	2119	924	77.8%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	1159	1939	983	118.0%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	290	2094	742	39.1%
5/1		U	N/A	N/A	-		-	-	-	1236	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1056	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	917	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	643	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
9/1	Ahead	U	N/A	N/A	A		1	15	-	455	1992	531	85.7%
9/2	Ahead Right	U	N/A	N/A	A		1	15	-	496	2121	566	87.7%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	52	Inf	Inf	0.0%

Full Input Data And Results

11/2	Ahead	U	N/A	N/A	-		-	-	-	728	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1236	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	993	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	993	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**3386**	**0**	**0**	**15.4**	**103.3**	**0.0**	**118.7**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**3386**	**0**	**0**	**15.4**	**103.3**	**0.0**	**118.7**	**-**	**-**	**-**	**-**
1/1	354	354	354	0	0	0.0	0.6	-	0.6	5.6	0.0	0.6	0.6
1/2	355	355	355	0	0	0.0	0.6	-	0.6	5.7	0.0	0.6	0.6
2/1	601	601	-	-	-	1.1	0.5	-	1.6	9.9	5.7	0.5	6.2
2/2	651	651	-	-	-	1.3	0.5	-	1.8	9.8	6.1	0.5	6.7
3/1	685	685	685	0	0	0.1	1.7	-	1.8	9.3	3.6	1.7	5.3
3/2	719	719	719	0	0	0.0	1.7	-	1.7	8.6	1.0	1.7	2.7
4/1	1159	983	983	0	0	7.4	91.4	-	98.8	306.8	57.9	91.4	149.3
4/2	290	290	290	0	0	0.0	0.3	-	0.3	4.0	0.0	0.3	0.3
5/1	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1056	1056	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	917	917	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	643	643	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	455	455	-	-	-	2.6	2.8	-	5.4	42.9	7.2	2.8	10.0
9/2	496	496	-	-	-	2.9	3.3	-	6.2	44.7	7.9	3.3	11.1
10/1	230	230	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	52	52	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	728	728	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	993	993	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	993	993	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 2.6 Total Delay for Signalled Lanes (pcuHr): 15.02 Cycle Time (s): 60
PRC Over All Lanes (%): -31.1 Total Delay Over All Lanes(pcuHr): 118.71

Full Input Data And Results

Appendix 8 – Alternative Assessment Outputs

Junctions 9

ARCADY 9 - Roundabout Module

Filename: J2.j9
Path: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Reports\Highways England Response\20-08-21 HE Note TN03\HE Review 301120 \Observed Only
Report generation date: 01/12/2020 11:41:08

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
[Lane Simulation] - Alternative DM										
Arm 1	D3	6.8	17.79		C	D4	5.3	15.95		C
Arm 2		0.9	5.48		A		2.8	9.48		A
Arm 3		3.6	8.35		A		1.9	6.32		A
Arm 4		0.5	4.94		A		1.3	6.61		A
[Lane Simulation] - Alternative DS										
Arm 1	D5	4.9	13.57		B	D6	4.5	14.27		B
Arm 2		1.1	5.60		A		6.8	16.72		C
Arm 3		3.4	8.62		A		2.2	6.65		A
Arm 4		0.5	4.71		A		1.5	6.69		A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay.

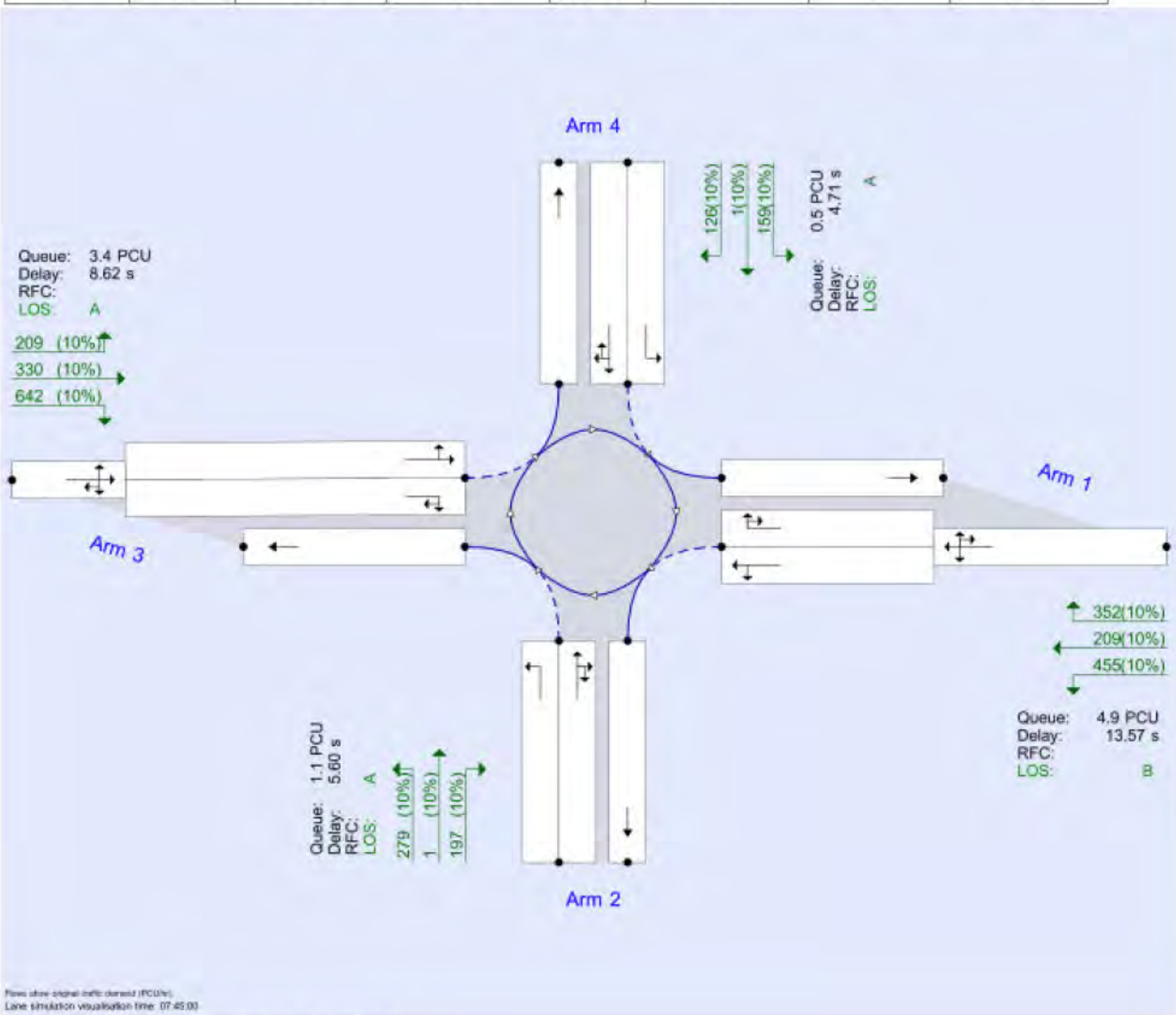
File summary

File Description

Title	Junction 2, A3(M)
Location	
Site number	
Date	26/09/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	62100616
Enumerator	CORP\UKAJT009
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			1553187562	109	14.17

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Alternative DM	AM	ONE HOUR	07:45	09:15	15	✓
D4	Alternative DM	PM	ONE HOUR	16:45	18:15	15	✓
D5	Alternative DS	AM	ONE HOUR	07:45	09:15	15	✓
D6	Alternative DS	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

Alternative DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	10.92	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Dell Piece East	
2	A3(M) south	
3	B2149 Dell Piece West	
4	A3(M) north	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.50	7.60	23.4	45.0	125.0	7.0	
2	6.00	6.20	0.1	999.0	125.0	5.0	
3	3.50	8.50	26.4	50.0	125.0	10.0	
4	6.00	6.50	22.0	999.0	125.0	5.0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.891	2671
2	0.914	2342
3	1.100	3017
4	0.994	2574

The slope and intercept shown above include any corrections and adjustments.

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2, 3	✓	5.00		1000	99999	
			2	1, 4	✓	5.00		1000	99999	
		2	1	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	3		Infinity		1000	99999	
			2	1, 2, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	1, 4	✓	8.00		1000	99999	
			2	2, 3	✓	8.00		1000	99999	
		2	1	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
4	Entry	1	1	1		Infinity		1000	99999	
			2	2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.445	1335
			2	0.445	1335
2	Entry	1	1	0.457	1171
			2	0.457	1171
3	Entry	1	1	0.550	1509
			2	0.550	1509
4	Entry	1	1	0.497	1287
			2	0.497	1287

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm			
			1	2	3	4
1	1	1		✓	✓	
		2	✓			✓
	2	1	✓	✓	✓	✓
2	1	1			✓	
		2	✓	✓		✓
3	1	1	✓			✓
		2		✓	✓	
	2	1	✓	✓	✓	✓
4	1	1	✓			
		2		✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Alternative DM	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1056	100.000
2		ONE HOUR	✓	456	100.000
3		ONE HOUR	✓	1178	100.000
4		ONE HOUR	✓	294	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	489	214	353
	2	199	2	254	1
	3	323	597	2	256
	4	175	1	118	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	17.79	6.8	C	967	1450
2	5.48	0.9	A	415	622
3	8.35	3.6	A	1083	1624
4	4.94	0.5	A	267	401

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	797	199	550	797	793	529	0.0	1.3	6.550	A
2	340	85	530	339	344	817	0.0	0.5	4.853	A
3	894	223	425	896	889	444	0.0	1.1	4.831	A
4	230	57	850	229	224	472	0.0	0.3	4.527	A

THE FUTURE OF TRANSPORT

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	941	235	657	940	938	628	1.3	2.6	8.287	A
2	410	102	621	408	411	976	0.5	0.7	5.073	A
3	1065	266	507	1068	1059	521	1.1	1.4	5.681	A
4	263	66	1021	264	263	555	0.3	0.3	4.745	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1157	289	802	1153	1150	772	2.6	5.9	16.083	C
2	494	124	757	496	494	1198	0.7	0.7	5.484	A
3	1310	328	608	1312	1301	645	1.4	3.2	7.756	A
4	316	79	1256	318	324	663	0.3	0.5	4.943	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1168	292	782	1147	1153	751	5.9	6.8	17.789	C
2	491	123	748	489	493	1182	0.7	0.9	5.387	A
3	1287	322	599	1287	1295	638	3.2	3.6	8.347	A
4	316	79	1217	316	323	669	0.5	0.4	4.690	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	945	236	634	943	973	621	6.8	2.6	10.427	B
2	408	102	599	411	416	978	0.9	0.5	5.214	A
3	1050	263	488	1050	1053	522	3.6	1.8	5.996	A
4	258	64	997	259	264	542	0.4	0.3	4.658	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	791	198	537	785	795	533	2.6	1.6	6.333	A
2	344	86	517	346	343	804	0.5	0.4	4.820	A
3	890	223	422	892	893	442	1.8	1.1	4.847	A
4	222	55	847	223	219	466	0.3	0.3	4.392	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	524	1091	0.481	524	526	0.0	0.9	6.848	A
			2	1, 4	272	1091	0.249	273	267	0.0	0.3	4.859	A
		2	1	(1, 2, 3, 4)	797			796	798	0.0	0.1	0.369	A
	Exit	1	1		529			529	525	0.0	0.0	0.000	A
2	Entry	1	1	3	188	1001	0.187	187	192	0.0	0.4	4.941	A
			2	1, 2, 4	152	1001	0.152	153	151	0.0	0.2	4.743	A
	Exit	1	1		817			817	818	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	442	1275	0.347	443	436	0.0	0.6	4.751	A
			2	2, 3	451	1275	0.354	453	453	0.0	0.5	4.878	A
		2	1	(1, 2, 3, 4)	894			894	893	0.0	0.0	0.015	A
	Exit	1	1		444			444	447	0.0	0.0	0.000	A
4	Entry	1	1	1	135	1000	0.135	135	131	0.0	0.1	4.492	A
			2	2, 3, 4	94	1000	0.094	94	93	0.0	0.2	4.578	A
	Exit	1	1		472			472	460	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	617	1047	0.589	617	617	0.9	1.7	8.258	A
			2	1, 4	325	1047	0.310	323	320	0.3	0.7	5.328	A
		2	1	(1, 2, 3, 4)	941			942	942	0.1	0.3	1.028	A
	Exit	1	1		628			628	624	0.0	0.0	0.000	A
2	Entry	1	1	3	224	1000	0.224	223	228	0.4	0.4	5.278	A
			2	1, 2, 4	185	1000	0.185	185	183	0.2	0.2	4.816	A
	Exit	1	1		976			976	975	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	520	1230	0.423	520	514	0.6	0.8	5.397	A
			2	2, 3	545	1230	0.443	548	545	0.5	0.7	5.803	A
		2	1	(1, 2, 3, 4)	1065			1065	1061	0.0	0.0	0.076	A
	Exit	1	1		521			521	522	0.0	0.0	0.000	A
4	Entry	1	1	1	156	1000	0.156	156	158	0.1	0.2	4.771	A
			2	2, 3, 4	107	1000	0.107	108	106	0.2	0.1	4.705	A
	Exit	1	1		555			555	549	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	762	1011	0.754	762	770	1.7	2.6	11.531	B
			2	1, 4	393	1011	0.389	391	380	0.7	1.0	6.612	A
		2	1	(1, 2, 3, 4)	1157			1156	1155	0.3	2.3	6.119	A
	Exit	1	1		772			772	769	0.0	0.0	0.000	A
2	Entry	1	1	3	278	1000	0.278	278	275	0.4	0.4	5.619	A
			2	1, 2, 4	216	1000	0.216	217	220	0.2	0.2	5.315	A
	Exit	1	1		1198			1198	1202	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	637	1174	0.543	636	633	0.8	1.5	7.139	A
			2	2, 3	674	1174	0.574	675	667	0.7	1.5	7.692	A
		2	1	(1, 2, 3, 4)	1310			1311	1307	0.0	0.1	0.332	A
	Exit	1	1		645			645	641	0.0	0.0	0.000	A
4	Entry	1	1	1	192	1000	0.192	192	196	0.2	0.3	5.000	A
			2	2, 3, 4	124	1000	0.124	125	128	0.1	0.2	4.858	A
	Exit	1	1		663			663	657	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	769	1012	0.759	766	768	2.6	2.7	11.850	B
			2	1, 4	380	1012	0.376	381	385	1.0	0.8	6.513	A
		2	1	(1, 2, 3, 4)	1168			1149	1153	2.3	3.4	7.709	A
	Exit	1	1		751			751	766	0.0	0.0	0.000	A
2	Entry	1	1	3	272	1000	0.272	271	274	0.4	0.5	5.588	A
			2	1, 2, 4	219	1000	0.219	218	219	0.2	0.4	5.137	A
	Exit	1	1		1182			1182	1186	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	640	1179	0.543	640	644	1.5	1.8	7.919	A
			2	2, 3	647	1179	0.549	647	651	1.5	1.6	7.665	A
		2	1	(1, 2, 3, 4)	1287			1287	1296	0.1	0.2	0.551	A
	Exit	1	1		638			638	639	0.0	0.0	0.000	A
4	Entry	1	1	1	182	1000	0.182	183	193	0.3	0.3	4.924	A
			2	2, 3, 4	133	1000	0.133	133	130	0.2	0.1	4.346	A
	Exit	1	1		669			669	673	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	636	1056	0.602	634	653	2.7	1.7	9.306	A
			2	1, 4	309	1056	0.293	310	321	0.8	0.5	5.728	A
		2	1	(1, 2, 3, 4)	945			945	968	3.4	0.4	2.396	A
	Exit	1	1		621			621	631	0.0	0.0	0.000	A
2	Entry	1	1	3	233	1000	0.233	232	231	0.5	0.3	5.345	A
			2	1, 2, 4	176	1000	0.176	179	185	0.4	0.2	5.051	A
	Exit	1	1		978			978	988	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	520	1240	0.419	518	520	1.8	0.9	5.816	A
			2	2, 3	530	1240	0.427	531	532	1.6	0.8	6.015	A
		2	1	(1, 2, 3, 4)	1050			1050	1046	0.2	0.0	0.089	A
	Exit	1	1		522			522	534	0.0	0.0	0.000	A
4	Entry	1	1	1	158	1000	0.158	159	160	0.3	0.2	4.676	A
			2	2, 3, 4	100	1000	0.100	100	105	0.1	0.1	4.632	A
	Exit	1	1		542			542	553	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	521	1096	0.475	515	527	1.7	1.2	6.546	A
			2	1, 4	270	1096	0.246	270	268	0.5	0.3	4.995	A
		2	1	(1, 2, 3, 4)	791			790	792	0.4	0.1	0.327	A
	Exit	1	1		533			533	529	0.0	0.0	0.000	A
2	Entry	1	1	3	194	1001	0.194	194	192	0.3	0.3	4.918	A
			2	1, 2, 4	150	1001	0.150	152	151	0.2	0.1	4.695	A
	Exit	1	1		804			804	818	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	445	1277	0.348	445	443	0.9	0.6	4.708	A
			2	2, 3	446	1277	0.349	446	451	0.8	0.5	4.948	A
		2	1	(1, 2, 3, 4)	890			890	891	0.0	0.0	0.018	A
	Exit	1	1		442			442	439	0.0	0.0	0.000	A
4	Entry	1	1	1	133	1000	0.133	133	132	0.2	0.2	4.418	A
			2	2, 3, 4	89	1000	0.089	90	87	0.1	0.1	4.351	A
	Exit	1	1		466			466	464	0.0	0.0	0.000	A

Alternative DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	9.94	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Alternative DM	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	932	100.000
2		ONE HOUR	✓	1005	100.000
3		ONE HOUR	✓	833	100.000
4		ONE HOUR	✓	641	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	370	335	227
	2	449	0	556	0
	3	249	396	5	183
	4	392	3	246	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	15.95	5.3	C	859	1289
2	9.48	2.8	A	920	1380
3	6.32	1.9	A	760	1140
4	6.61	1.3	A	593	889

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	714	179	494	714	695	835	0.0	1.4	6.308	A
2	755	189	623	757	748	585	0.0	1.3	6.432	A
3	627	157	522	626	621	858	0.0	1.0	4.370	A
4	493	123	837	492	487	310	0.0	1.0	5.643	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	850	213	586	848	834	992	1.4	2.2	8.291	A
2	909	227	734	910	898	700	1.3	2.0	7.456	A
3	746	187	612	746	744	1031	1.0	1.0	5.071	A
4	586	146	989	589	584	370	1.0	0.9	5.953	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1023	256	721	1016	1011	1204	2.2	4.9	14.378	B
2	1100	275	889	1103	1093	848	2.0	2.8	9.395	A
3	932	233	733	925	921	1260	1.0	1.9	6.322	A
4	711	178	1213	713	712	445	0.9	1.2	6.583	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1040	260	723	1024	1020	1190	4.9	5.3	15.951	C
2	1096	274	893	1101	1096	855	2.8	2.7	9.481	A
3	907	227	741	912	916	1253	1.9	1.5	6.249	A
4	707	177	1202	710	712	451	1.2	1.3	6.608	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	821	205	562	820	839	988	5.3	2.1	9.201	A
2	910	228	715	913	909	667	2.7	2.0	7.836	A
3	731	183	604	733	750	1024	1.5	1.0	5.258	A
4	567	142	982	568	584	355	1.3	1.0	5.878	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	705	176	476	706	708	826	2.1	1.1	6.370	A
2	748	187	615	745	751	567	2.0	1.5	6.649	A
3	619	155	511	614	613	850	1.0	1.1	4.413	A
4	495	124	809	494	491	317	1.0	0.8	5.503	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	539	1115	0.483	538	525	0.0	1.1	6.573	A
			2	1, 4	176	1115	0.158	176	170	0.0	0.2	4.271	A
		2	1	(1, 2, 3, 4)	714			715	701	0.0	0.1	0.300	A
	Exit	1	1		835			835	822	0.0	0.0	0.000	A
2	Entry	1	1	3	410	1000	0.410	411	409	0.0	0.7	6.783	A
			2	1, 2, 4	346	1000	0.346	346	338	0.0	0.6	6.007	A
	Exit	1	1		585			585	574	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	322	1222	0.264	321	319	0.0	0.6	4.412	A
			2	2, 3	305	1222	0.249	305	302	0.0	0.4	4.326	A
		2	1	(1, 2, 3, 4)	627			627	625	0.0	0.0	0.000	A
	Exit	1	1		858			858	851	0.0	0.0	0.000	A
4	Entry	1	1	1	302	1000	0.302	303	298	0.0	0.5	6.140	A
			2	2, 3, 4	192	1000	0.192	189	189	0.0	0.5	4.860	A
	Exit	1	1		310			310	304	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	643	1075	0.598	642	630	1.1	1.6	8.031	A
			2	1, 4	208	1075	0.194	206	205	0.2	0.3	4.616	A
		2	1	(1, 2, 3, 4)	850			851	837	0.1	0.3	1.088	A
	Exit	1	1		992			992	984	0.0	0.0	0.000	A
2	Entry	1	1	3	507	1000	0.507	504	496	0.7	1.2	7.848	A
			2	1, 2, 4	402	1000	0.402	406	403	0.6	0.8	6.974	A
	Exit	1	1		700			700	690	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	386	1172	0.329	386	386	0.6	0.5	5.253	A
			2	2, 3	361	1172	0.308	360	358	0.4	0.6	4.851	A
		2	1	(1, 2, 3, 4)	746			746	744	0.0	0.0	0.011	A
	Exit	1	1		1031			1031	1017	0.0	0.0	0.000	A
4	Entry	1	1	1	362	1000	0.362	363	359	0.5	0.6	6.370	A
			2	2, 3, 4	223	1000	0.223	226	224	0.5	0.3	5.288	A
	Exit	1	1		370			370	369	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	772	1026	0.752	773	766	1.6	2.6	11.310	B
			2	1, 4	244	1026	0.238	243	245	0.3	0.5	5.270	A
		2	1	(1, 2, 3, 4)	1023			1016	1016	0.3	1.8	4.510	A
	Exit	1	1		1204			1204	1192	0.0	0.0	0.000	A
2	Entry	1	1	3	613	1000	0.613	613	606	1.2	1.9	10.515	B
			2	1, 2, 4	487	1000	0.487	490	488	0.8	0.9	8.004	A
	Exit	1	1		848			848	843	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	489	1107	0.442	484	479	0.5	1.1	6.531	A
			2	2, 3	442	1107	0.400	442	442	0.6	0.8	5.950	A
		2	1	(1, 2, 3, 4)	932			931	924	0.0	0.0	0.068	A
	Exit	1	1		1260			1260	1250	0.0	0.0	0.000	A
4	Entry	1	1	1	431	1000	0.431	433	432	0.6	0.7	7.320	A
			2	2, 3, 4	279	1000	0.279	279	279	0.3	0.5	5.447	A
	Exit	1	1		445			445	451	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	779	1025	0.760	775	770	2.6	2.6	11.705	B
			2	1, 4	249	1025	0.243	249	250	0.5	0.3	5.288	A
		2	1	(1, 2, 3, 4)	1040			1028	1019	1.8	2.4	5.794	A
	Exit	1	1		1190			1190	1204	0.0	0.0	0.000	A
2	Entry	1	1	3	608	1000	0.608	610	600	1.9	1.5	10.829	B
			2	1, 2, 4	491	1000	0.491	492	496	0.9	1.2	7.853	A
	Exit	1	1		855			855	844	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	467	1102	0.423	472	474	1.1	0.8	6.258	A
			2	2, 3	440	1102	0.399	440	443	0.8	0.7	6.203	A
		2	1	(1, 2, 3, 4)	907			907	915	0.0	0.0	0.018	A
	Exit	1	1		1253			1253	1247	0.0	0.0	0.000	A
4	Entry	1	1	1	425	1000	0.425	427	433	0.7	0.8	7.143	A
			2	2, 3, 4	282	1000	0.282	283	279	0.5	0.5	5.779	A
	Exit	1	1		451			451	448	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	626	1085	0.577	625	635	2.6	1.5	8.586	A
			2	1, 4	194	1085	0.179	194	204	0.3	0.3	4.672	A
		2	1	(1, 2, 3, 4)	821			820	834	2.4	0.3	1.642	A
	Exit	1	1		988			988	987	0.0	0.0	0.000	A
2	Entry	1	1	3	506	1000	0.506	504	505	1.5	1.3	8.523	A
			2	1, 2, 4	404	1000	0.404	409	404	1.2	0.8	6.977	A
	Exit	1	1		667			667	695	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	383	1177	0.326	385	385	0.8	0.5	5.249	A
			2	2, 3	347	1177	0.295	348	365	0.7	0.5	5.248	A
		2	1	(1, 2, 3, 4)	731			731	749	0.0	0.0	0.009	A
	Exit	1	1		1024			1024	1034	0.0	0.0	0.000	A
4	Entry	1	1	1	352	1000	0.352	354	359	0.8	0.6	6.339	A
			2	2, 3, 4	214	1000	0.214	214	225	0.5	0.4	5.145	A
	Exit	1	1		355			355	366	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	529	1123	0.471	531	535	1.5	0.8	6.524	A
			2	1, 4	175	1123	0.156	175	174	0.3	0.2	4.421	A
		2	1	(1, 2, 3, 4)	705			704	705	0.3	0.1	0.372	A
	Exit	1	1		826			826	822	0.0	0.0	0.000	A
2	Entry	1	1	3	412	1000	0.412	410	414	1.3	0.9	7.110	A
			2	1, 2, 4	336	1000	0.336	336	337	0.8	0.6	6.081	A
	Exit	1	1		567			567	567	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	326	1228	0.266	324	322	0.5	0.6	4.504	A
			2	2, 3	293	1228	0.238	290	290	0.5	0.5	4.309	A
		2	1	(1, 2, 3, 4)	619			619	613	0.0	0.0	0.002	A
	Exit	1	1		850			850	864	0.0	0.0	0.000	A
4	Entry	1	1	1	309	1000	0.309	308	300	0.6	0.6	5.783	A
			2	2, 3, 4	186	1000	0.185	186	192	0.4	0.2	5.064	A
	Exit	1	1		317			317	311	0.0	0.0	0.000	A

Alternative DS, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	9.46	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Alternative DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1016	100.000
2		ONE HOUR	✓	479	100.000
3		ONE HOUR	✓	1183	100.000
4		ONE HOUR	✓	286	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	455	209	352
	2	197	2	279	1
	3	330	642	2	209
	4	159	1	126	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	13.57	4.9	B	937	1405
2	5.60	1.1	A	432	648
3	8.62	3.4	A	1083	1625
4	4.71	0.5	A	265	397

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	766	192	571	767	757	524	0.0	1.4	6.266	A
2	357	89	521	358	361	818	0.0	0.5	4.925	A
3	874	219	419	875	890	460	0.0	1.3	5.017	A
4	221	55	877	219	216	417	0.0	0.3	4.541	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	901	225	701	900	903	623	1.4	2.1	8.331	A
2	430	107	629	431	431	971	0.5	0.5	5.147	A
3	1066	266	499	1068	1057	561	1.3	1.9	5.873	A
4	267	67	1057	267	262	510	0.3	0.4	4.614	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1136	284	846	1135	1114	768	2.1	4.9	13.567	B
2	517	129	770	519	525	1211	0.5	0.7	5.555	A
3	1304	326	608	1307	1305	681	1.9	3.0	8.622	A
4	319	80	1296	318	311	619	0.4	0.5	4.666	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1134	284	859	1132	1122	757	4.9	4.1	13.301	B
2	520	130	775	524	524	1217	0.7	0.8	5.596	A
3	1311	328	618	1308	1302	681	3.0	3.4	8.215	A
4	314	78	1301	314	313	622	0.5	0.3	4.708	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	918	230	681	921	928	611	4.1	2.0	8.849	A
2	425	106	633	421	430	970	0.8	1.1	5.252	A
3	1061	265	492	1058	1061	561	3.4	2.0	6.049	A
4	255	64	1036	257	256	514	0.3	0.3	4.560	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	765	191	576	768	770	510	2.0	1.3	6.556	A
2	344	86	531	344	358	814	1.1	0.4	4.866	A
3	884	221	419	885	892	456	2.0	1.2	5.037	A
4	213	53	872	214	218	432	0.3	0.2	4.421	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	504	1082	0.465	505	498	0.0	0.9	6.585	A
			2	1, 4	262	1082	0.243	262	259	0.0	0.4	4.708	A
		2	1	(1, 2, 3, 4)	766			766	763	0.0	0.1	0.320	A
	Exit	1	1		524			524	524	0.0	0.0	0.000	A
2	Entry	1	1	3	201	1000	0.201	202	206	0.0	0.3	4.964	A
			2	1, 2, 4	156	1000	0.156	157	155	0.0	0.2	4.873	A
	Exit	1	1		818			818	822	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	403	1279	0.315	403	409	0.0	0.6	4.871	A
			2	2, 3	472	1279	0.369	472	481	0.0	0.7	5.128	A
		2	1	(1, 2, 3, 4)	874			874	895	0.0	0.0	0.007	A
	Exit	1	1		460			460	461	0.0	0.0	0.000	A
4	Entry	1	1	1	122	1000	0.122	121	120	0.0	0.1	4.456	A
			2	2, 3, 4	99	1000	0.099	98	96	0.0	0.2	4.646	A
	Exit	1	1		417			417	418	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	582	1035	0.562	582	587	0.9	1.4	8.263	A
			2	1, 4	317	1035	0.306	317	315	0.4	0.4	5.575	A
		2	1	(1, 2, 3, 4)	901			898	904	0.1	0.3	0.998	A
	Exit	1	1		623			623	619	0.0	0.0	0.000	A
2	Entry	1	1	3	249	1000	0.249	250	249	0.3	0.3	5.256	A
			2	1, 2, 4	180	1000	0.180	182	181	0.2	0.2	4.997	A
	Exit	1	1		971			971	971	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	486	1234	0.394	487	484	0.6	0.8	5.189	A
			2	2, 3	580	1234	0.470	580	572	0.7	1.1	5.978	A
		2	1	(1, 2, 3, 4)	1066			1066	1060	0.0	0.0	0.056	A
	Exit	1	1		561			561	556	0.0	0.0	0.000	A
4	Entry	1	1	1	149	1000	0.149	149	145	0.1	0.2	4.690	A
			2	2, 3, 4	118	1000	0.118	118	117	0.2	0.2	4.520	A
	Exit	1	1		510			510	506	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	748	1004	0.745	748	730	1.4	2.4	10.938	B
			2	1, 4	386	1004	0.384	387	385	0.4	0.7	6.231	A
		2	1	(1, 2, 3, 4)	1136			1134	1120	0.3	1.8	4.228	A
	Exit	1	1		768			768	757	0.0	0.0	0.000	A
2	Entry	1	1	3	297	1000	0.297	298	305	0.3	0.4	5.874	A
			2	1, 2, 4	220	1000	0.220	220	220	0.2	0.3	5.114	A
	Exit	1	1		1211			1211	1209	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	600	1174	0.511	602	594	0.8	1.2	7.001	A
			2	2, 3	702	1174	0.598	705	711	1.1	1.5	8.678	A
		2	1	(1, 2, 3, 4)	1304			1302	1308	0.0	0.3	0.700	A
	Exit	1	1		681			681	675	0.0	0.0	0.000	A
4	Entry	1	1	1	180	1000	0.180	179	175	0.2	0.3	4.704	A
			2	2, 3, 4	138	1000	0.138	139	136	0.2	0.2	4.618	A
	Exit	1	1		619			619	614	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	741	1005	0.737	742	737	2.4	2.2	10.904	B
			2	1, 4	391	1005	0.389	390	386	0.7	0.7	6.546	A
		2	1	(1, 2, 3, 4)	1134			1132	1122	1.8	1.2	3.907	A
	Exit	1	1		757			757	755	0.0	0.0	0.000	A
2	Entry	1	1	3	295	1000	0.295	296	302	0.4	0.6	5.847	A
			2	1, 2, 4	225	1000	0.225	228	222	0.3	0.2	5.253	A
	Exit	1	1		1217			1217	1216	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	595	1169	0.509	592	591	1.2	1.1	6.721	A
			2	2, 3	712	1169	0.609	713	711	1.5	1.9	8.538	A
		2	1	(1, 2, 3, 4)	1311			1307	1303	0.3	0.4	0.499	A
	Exit	1	1		681			681	675	0.0	0.0	0.000	A
4	Entry	1	1	1	170	1000	0.170	170	175	0.3	0.2	4.744	A
			2	2, 3, 4	144	1000	0.144	145	138	0.2	0.1	4.663	A
	Exit	1	1		622			622	616	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	604	1040	0.581	606	604	2.2	1.3	8.536	A
			2	1, 4	315	1040	0.303	316	324	0.7	0.5	5.886	A
		2	1	(1, 2, 3, 4)	918			919	924	1.2	0.2	1.266	A
	Exit	1	1		611			611	615	0.0	0.0	0.000	A
2	Entry	1	1	3	246	1000	0.246	244	250	0.6	0.6	5.553	A
			2	1, 2, 4	179	1000	0.179	176	180	0.2	0.4	4.837	A
	Exit	1	1		970			970	986	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	499	1238	0.403	495	487	1.1	1.0	5.585	A
			2	2, 3	563	1238	0.455	562	574	1.9	0.9	6.317	A
		2	1	(1, 2, 3, 4)	1061			1061	1057	0.4	0.0	0.082	A
	Exit	1	1		561			561	556	0.0	0.0	0.000	A
4	Entry	1	1	1	139	1000	0.139	140	143	0.2	0.2	4.581	A
			2	2, 3, 4	116	1000	0.116	117	113	0.1	0.1	4.532	A
	Exit	1	1		514			514	518	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	496	1079	0.460	499	506	1.3	0.8	6.781	A
			2	1, 4	270	1079	0.251	270	263	0.5	0.5	5.128	A
		2	1	(1, 2, 3, 4)	765			767	767	0.2	0.0	0.347	A
	Exit	1	1		510			510	520	0.0	0.0	0.000	A
2	Entry	1	1	3	195	1000	0.195	195	206	0.6	0.2	5.082	A
			2	1, 2, 4	150	1000	0.150	149	153	0.4	0.2	4.575	A
	Exit	1	1		814			814	830	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	408	1278	0.319	409	406	1.0	0.4	4.789	A
			2	2, 3	476	1278	0.372	476	486	0.9	0.8	5.226	A
		2	1	(1, 2, 3, 4)	884			884	889	0.0	0.0	0.011	A
	Exit	1	1		456			456	467	0.0	0.0	0.000	A
4	Entry	1	1	1	115	1000	0.115	116	121	0.2	0.1	4.469	A
			2	2, 3, 4	99	1000	0.099	99	97	0.1	0.1	4.361	A
	Exit	1	1		432			432	421	0.0	0.0	0.000	A

Alternative DS, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	11.85	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1093	0.00
2	1048	165.00
3	233	0.00
4	839	150.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Alternative DS	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	914	100.000
2		ONE HOUR	✓	1161	100.000
3		ONE HOUR	✓	904	100.000
4		ONE HOUR	✓	614	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	369	318	227
	2	418	0	743	0
	3	254	421	5	224
	4	400	3	211	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	14.27	4.5	B	845	1268
2	16.72	6.8	C	1071	1606
3	6.65	2.2	A	835	1252
4	6.69	1.5	A	566	849

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	690	172	474	687	686	817	0.0	1.0	5.878	A
2	859	215	559	862	875	603	0.0	2.0	7.624	A
3	677	169	476	677	685	944	0.0	0.8	4.513	A
4	471	118	823	469	471	330	0.0	0.9	5.770	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	824	206	571	824	820	974	1.0	2.0	7.810	A
2	1062	266	682	1056	1048	713	2.0	3.4	10.500	B
3	824	206	580	820	799	1158	0.8	1.1	5.020	A
4	542	136	1004	542	550	395	0.9	0.9	5.842	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1040	260	688	1045	1007	1207	2.0	3.3	12.506	B
2	1292	323	840	1293	1283	893	3.4	6.3	16.723	C
3	995	249	724	998	986	1409	1.1	2.2	6.654	A
4	675	169	1217	678	676	505	0.9	1.4	6.527	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1004	251	686	999	1009	1170	3.3	4.5	14.272	B
2	1297	324	835	1289	1282	850	6.3	6.8	16.688	C
3	999	250	710	1002	985	1414	2.2	2.0	6.648	A
4	670	167	1192	665	677	519	1.4	1.5	6.687	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	808	202	601	802	816	1003	4.5	2.2	8.399	A
2	1043	261	691	1043	1062	713	6.8	2.9	10.796	B
3	848	212	587	846	826	1147	2.0	1.4	5.445	A
4	579	145	1024	581	580	410	1.5	0.8	5.919	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	708	177	474	712	698	814	2.2	1.1	6.233	A
2	874	218	579	881	878	608	2.9	1.7	8.675	A
3	668	167	499	669	682	961	1.4	0.7	4.560	A
4	458	114	828	460	463	339	0.8	0.6	5.437	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	524	1124	0.466	523	513	0.0	0.8	6.242	A
			2	1, 4	166	1124	0.148	165	173	0.0	0.2	4.117	A
		2	1	(1, 2, 3, 4)	690			690	690	0.0	0.0	0.173	A
	Exit	1	1		817			817	814	0.0	0.0	0.000	A
2	Entry	1	1	3	553	1000	0.553	551	558	0.0	1.7	8.533	A
			2	1, 2, 4	306	1000	0.306	311	317	0.0	0.4	6.001	A
	Exit	1	1		603			603	599	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	356	1247	0.285	357	360	0.0	0.3	4.618	A
			2	2, 3	321	1247	0.257	320	325	0.0	0.5	4.395	A
		2	1	(1, 2, 3, 4)	677			677	689	0.0	0.0	0.000	A
	Exit	1	1		944			944	962	0.0	0.0	0.000	A
4	Entry	1	1	1	317	1000	0.317	313	306	0.0	0.7	6.181	A
			2	2, 3, 4	154	1000	0.154	155	165	0.0	0.2	5.016	A
	Exit	1	1		330			330	342	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	617	1081	0.571	620	621	0.8	1.3	7.884	A
			2	1, 4	204	1081	0.188	203	199	0.2	0.3	4.443	A
		2	1	(1, 2, 3, 4)	824			821	822	0.0	0.4	0.752	A
	Exit	1	1		974			974	981	0.0	0.0	0.000	A
2	Entry	1	1	3	687	1000	0.687	680	673	1.7	2.6	12.581	B
			2	1, 2, 4	375	1000	0.375	377	375	0.4	0.8	6.753	A
	Exit	1	1		713			713	704	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	437	1190	0.367	435	423	0.3	0.4	4.978	A
			2	2, 3	387	1190	0.325	384	376	0.5	0.7	5.059	A
		2	1	(1, 2, 3, 4)	824			824	800	0.0	0.0	0.004	A
	Exit	1	1		1158			1158	1158	0.0	0.0	0.000	A
4	Entry	1	1	1	357	1000	0.357	355	358	0.7	0.6	6.353	A
			2	2, 3, 4	186	1000	0.186	187	192	0.2	0.2	4.886	A
	Exit	1	1		395			395	395	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	782	1034	0.757	785	757	1.3	2.1	10.466	B
			2	1, 4	265	1034	0.256	259	251	0.3	0.7	5.362	A
		2	1	(1, 2, 3, 4)	1040			1047	1012	0.4	0.6	3.306	A
	Exit	1	1		1207			1207	1177	0.0	0.0	0.000	A
2	Entry	1	1	3	825	1000	0.825	829	825	2.6	5.4	21.803	C
			2	1, 2, 4	467	1000	0.467	464	458	0.8	1.0	7.480	A
	Exit	1	1		893			893	875	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	536	1111	0.482	537	522	0.4	1.1	6.847	A
			2	2, 3	459	1111	0.413	461	464	0.7	1.1	6.253	A
		2	1	(1, 2, 3, 4)	995			995	991	0.0	0.0	0.086	A
	Exit	1	1		1409			1409	1406	0.0	0.0	0.000	A
4	Entry	1	1	1	449	1000	0.449	451	441	0.6	1.1	7.292	A
			2	2, 3, 4	227	1000	0.227	227	235	0.2	0.3	5.106	A
	Exit	1	1		505			505	494	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	739	1034	0.714	738	755	2.1	2.5	11.255	B
			2	1, 4	261	1034	0.252	260	254	0.7	0.4	5.092	A
		2	1	(1, 2, 3, 4)	1004			999	1009	0.6	1.6	4.549	A
	Exit	1	1		1170			1170	1175	0.0	0.0	0.000	A
2	Entry	1	1	3	845	1000	0.845	840	822	5.4	5.8	21.949	C
			2	1, 2, 4	452	1000	0.452	450	460	1.0	1.0	7.348	A
	Exit	1	1		850			850	870	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	541	1118	0.484	544	519	1.1	1.0	6.756	A
			2	2, 3	459	1118	0.410	458	465	1.1	1.0	6.375	A
		2	1	(1, 2, 3, 4)	999			998	984	0.0	0.0	0.068	A
	Exit	1	1		1414			1414	1404	0.0	0.0	0.000	A
4	Entry	1	1	1	439	1000	0.439	435	445	1.1	1.0	7.423	A
			2	2, 3, 4	231	1000	0.231	228	233	0.3	0.5	5.284	A
	Exit	1	1		519			519	503	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	597	1070	0.558	596	611	2.5	1.5	8.337	A
			2	1, 4	207	1070	0.194	206	205	0.4	0.4	4.831	A
		2	1	(1, 2, 3, 4)	808			804	812	1.6	0.3	0.981	A
	Exit	1	1		1003			1003	974	0.0	0.0	0.000	A
2	Entry	1	1	3	663	1000	0.663	663	683	5.8	2.2	13.188	B
			2	1, 2, 4	380	1000	0.380	381	378	1.0	0.7	6.505	A
	Exit	1	1		713			713	711	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	449	1186	0.379	446	440	1.0	0.9	5.574	A
			2	2, 3	400	1186	0.337	402	386	1.0	0.5	5.285	A
		2	1	(1, 2, 3, 4)	848			848	823	0.0	0.0	0.011	A
	Exit	1	1		1147			1147	1164	0.0	0.0	0.000	A
4	Entry	1	1	1	380	1000	0.380	382	364	1.0	0.5	6.407	A
			2	2, 3, 4	200	1000	0.200	200	195	0.5	0.2	5.014	A
	Exit	1	1		410			410	414	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	539	1124	0.480	542	530	1.5	0.8	6.439	A
			2	1, 4	170	1124	0.151	170	168	0.4	0.3	4.308	A
		2	1	(1, 2, 3, 4)	708			710	694	0.3	0.1	0.319	A
	Exit	1	1		814			814	812	0.0	0.0	0.000	A
2	Entry	1	1	3	546	1001	0.546	552	562	2.2	1.3	10.310	B
			2	1, 2, 4	327	1001	0.327	329	317	0.7	0.4	5.819	A
	Exit	1	1		608			608	596	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	356	1234	0.288	355	366	0.9	0.4	4.645	A
			2	2, 3	312	1234	0.253	314	316	0.5	0.3	4.450	A
		2	1	(1, 2, 3, 4)	668			668	679	0.0	0.0	0.005	A
	Exit	1	1		961			961	973	0.0	0.0	0.000	A
4	Entry	1	1	1	297	1000	0.297	299	302	0.5	0.4	5.785	A
			2	2, 3, 4	161	1000	0.161	161	162	0.2	0.2	4.772	A
	Exit	1	1		339			339	341	0.0	0.0	0.000	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: J3.j9
Path: \\uk.wspgroup.com\central data\Projects\62100xxx\62100616 - Aquind VO No.3\A DCO\POST SUBMISSION\D. EIA POST SUBMISSION\Transport\WIP\Reports\Highways England Response\20-08-21 HE Note TN03\HE Review 301120 \Observed Only
Report generation date: 08/12/2020 13:29:54

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	[Lane Simulation] - Alternative DM							
Arm 1	1.4	5.35		A	1.1	5.46		A
Arm 2	1.8	6.06		A	3.3	7.88		A
Arm 3	41.9	57.57		F	2.5	5.14		A
Arm 4	1.1	5.75		A	2.7	8.35		A
	[Lane Simulation] - Alternative DS							
Arm 1	1.3	5.45		A	1.7	5.95		A
Arm 2	2.4	6.72		A	4.8	9.38		A
Arm 3	33.8	46.61		E	1.8	5.13		A
Arm 4	1.1	5.72		A	2.6	8.11		A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay.

File summary

File Description

Title	Junction 3, A3(M)
Location	
Site number	
Date	26/09/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	62100616
Enumerator	CORP\UKAJT009
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			1015540362	142	27.33

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Alternative DM	AM	ONE HOUR	07:45	09:15	15	✓
D4	Alternative DM	PM	ONE HOUR	16:45	18:15	15	✓
D5	Alternative DS	AM	ONE HOUR	07:45	09:15	15	✓
D6	Alternative DS	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

Alternative DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	31.60	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Hulbert Road east	
2	A3(M) south	
3	Hulbert Road west	
4	A3(M) north	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	4.10	7.50	24.9	40.0	145.0	9.0	
2	6.00	6.90	5.7	50.0	145.0	5.0	
3	7.60	7.60	0.0	45.0	145.0	4.0	
4	6.50	6.50	0.0	50.0	145.0	26.0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.762	2597
2	0.951	2551
3	1.208	3386
4	0.716	2207

The slope and intercept shown above include any corrections and adjustments.

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2, 3	✓	4.00		1000	99999	
			2	1, 3, 4	✓	4.00		1000	99999	
		2	1	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	3		Infinity		1000	99999	
			2	1, 2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	1, 4		Infinity		1000	99999	
			2	2, 3		Infinity		1000	99999	
	Exit	1	1			Infinity				
4	Entry	1	1	1		Infinity		1000	99999	
			2	2, 3, 4		Infinity		1000	99999	
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.381	1298
			2	0.381	1298
2	Entry	1	1	0.476	1276
			2	0.476	1276
3	Entry	1	1	0.604	1693
			2	0.604	1693
4	Entry	1	1	0.358	1104
			2	0.358	1104

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm			
			1	2	3	4
1	1	1		✓	✓	
		2	✓		✓	✓
	2	1	✓	✓	✓	✓
2	1	1			✓	
		2	✓	✓	✓	✓
3	1	1	✓			✓
		2		✓	✓	
4	1	1	✓			
		2		✓	✓	✓

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Alternative DM	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	669	100.000
2		ONE HOUR	✓	962	100.000
3		ONE HOUR	✓	2128	100.000
4		ONE HOUR	✓	524	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	459	195
	2	40	3	917	2
	3	325	1410	6	387
	4	212	3	309	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.35	1.4	A	615	923
2	6.06	1.8	A	872	1308
3	57.57	41.9	F	1959	2939
4	5.75	1.1	A	482	722

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	501	125	1318	499	508	433	0.0	0.8	4.575	A
2	726	181	731	724	729	1086	0.0	1.1	4.890	A
3	1594	399	180	1605	1587	1274	0.0	2.8	6.318	A
4	402	101	1349	402	402	437	0.0	0.6	5.078	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	611	153	1553	612	601	531	0.8	0.8	4.874	A
2	865	216	883	865	866	1283	1.1	1.4	5.196	A
3	1929	482	220	1915	1903	1528	2.8	7.0	10.462	B
4	472	118	1610	475	470	525	0.6	0.8	5.352	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	736	184	1841	734	731	629	0.8	1.4	5.285	A
2	1048	262	1066	1053	1057	1509	1.4	1.6	5.940	A
3	2358	589	262	2280	2253	1858	7.0	29.5	33.104	D
4	576	144	1895	575	576	647	0.8	1.0	5.724	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	738	184	1838	735	740	632	1.4	1.3	5.353	A
2	1031	258	1056	1035	1053	1517	1.6	1.8	6.059	A
3	2337	584	254	2289	2292	1836	29.5	41.9	57.568	F
4	574	143	1900	570	573	643	1.0	1.1	5.747	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	607	152	1622	609	605	517	1.3	0.7	4.889	A
2	846	212	875	846	865	1356	1.8	1.4	5.228	A
3	1926	481	216	1990	2046	1504	41.9	9.2	33.983	D
4	468	117	1671	468	476	536	1.1	0.6	5.350	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	498	124	1318	498	509	434	0.7	0.8	4.715	A
2	716	179	730	718	734	1086	1.4	1.0	4.915	A
3	1613	403	174	1618	1628	1273	9.2	3.1	8.422	A
4	397	99	1353	398	398	439	0.6	0.5	5.102	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	206	1000	0.206	205	208	0.0	0.3	4.193	A
			2	1, 3, 4	295	1000	0.295	294	301	0.0	0.5	4.809	A
		2	1	(1, 2, 3, 4)	501			501	511	0.0	0.0	0.017	A
	Exit	1	1		433			433	433	0.0	0.0	0.000	A
2	Entry	1	1	3	357	1001	0.356	356	357	0.0	0.5	4.822	A
			2	1, 2, 3, 4	369	1001	0.369	367	372	0.0	0.6	4.955	A
	Exit	1	1		1086			1086	1066	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	529	1584	0.334	531	532	0.0	0.6	3.885	A
			2	2, 3	1065	1584	0.672	1074	1054	0.0	2.2	7.545	A
	Exit	1	1		1274			1274	1287	0.0	0.0	0.000	A
4	Entry	1	1	1	161	1000	0.161	161	164	0.0	0.2	4.787	A
			2	2, 3, 4	241	1000	0.241	241	238	0.0	0.4	5.278	A
	Exit	1	1		437			437	440	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	244	1000	0.244	245	244	0.3	0.3	4.443	A
			2	1, 3, 4	367	1000	0.367	367	357	0.5	0.5	5.081	A
		2	1	(1, 2, 3, 4)	611			611	601	0.0	0.0	0.053	A
	Exit	1	1		531			531	525	0.0	0.0	0.000	A
2	Entry	1	1	3	431	1000	0.431	430	426	0.5	0.7	5.107	A
			2	1, 2, 3, 4	435	1000	0.435	435	440	0.6	0.8	5.282	A
	Exit	1	1		1283			1283	1271	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	643	1560	0.412	645	646	0.6	0.6	4.409	A
			2	2, 3	1286	1560	0.824	1270	1257	2.2	6.4	13.538	B
	Exit	1	1		1528			1528	1516	0.0	0.0	0.000	A
4	Entry	1	1	1	192	1000	0.192	194	191	0.2	0.2	4.986	A
			2	2, 3, 4	280	1000	0.280	281	280	0.4	0.5	5.600	A
	Exit	1	1		525			525	528	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	307	1000	0.307	307	304	0.3	0.5	4.823	A
			2	1, 3, 4	429	1000	0.429	427	427	0.5	0.9	5.477	A
		2	1	(1, 2, 3, 4)	736			736	734	0.0	0.0	0.079	A
	Exit	1	1		629			629	631	0.0	0.0	0.000	A
2	Entry	1	1	3	516	1000	0.516	519	518	0.7	0.8	5.869	A
			2	1, 2, 3, 4	532	1000	0.532	534	538	0.8	0.8	6.008	A
	Exit	1	1		1509			1509	1483	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	787	1535	0.513	787	785	0.6	1.2	5.273	A
			2	2, 3	1571	1535	1.024	1493	1468	6.4	28.3	47.176	E
	Exit	1	1		1858			1858	1861	0.0	0.0	0.000	A
4	Entry	1	1	1	230	1000	0.230	230	231	0.2	0.3	5.029	A
			2	2, 3, 4	347	1000	0.347	345	345	0.5	0.7	6.192	A
	Exit	1	1		647			647	642	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	308	1000	0.308	308	309	0.5	0.4	4.823	A
			2	1, 3, 4	429	1000	0.429	426	430	0.9	0.9	5.571	A
		2	1	(1, 2, 3, 4)	738			737	739	0.0	0.0	0.095	A
	Exit	1	1		632			632	627	0.0	0.0	0.000	A
2	Entry	1	1	3	501	1000	0.501	501	516	0.8	1.0	6.009	A
			2	1, 2, 3, 4	530	1000	0.530	532	538	0.8	0.8	6.107	A
	Exit	1	1		1517			1517	1523	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	792	1540	0.514	791	787	1.2	1.3	5.551	A
			2	2, 3	1545	1540	1.003	1498	1505	28.3	40.5	83.979	F
	Exit	1	1		1836			1836	1864	0.0	0.0	0.000	A
4	Entry	1	1	1	236	1000	0.236	233	228	0.3	0.4	5.156	A
			2	2, 3, 4	338	1000	0.338	337	345	0.7	0.6	6.140	A
	Exit	1	1		643			643	644	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	247	1000	0.247	249	249	0.4	0.2	4.518	A
			2	1, 3, 4	360	1000	0.360	360	356	0.9	0.5	5.099	A
		2	1	(1, 2, 3, 4)	607			607	603	0.0	0.0	0.029	A
	Exit	1	1		517			517	519	0.0	0.0	0.000	A
2	Entry	1	1	3	411	1000	0.411	411	422	1.0	0.7	5.166	A
			2	1, 2, 3, 4	436	1000	0.436	435	443	0.8	0.8	5.287	A
	Exit	1	1		1356			1356	1417	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	649	1562	0.415	646	642	1.3	0.9	4.384	A
			2	2, 3	1277	1562	0.817	1344	1404	40.5	8.3	48.826	E
	Exit	1	1		1504			1504	1530	0.0	0.0	0.000	A
4	Entry	1	1	1	192	1000	0.192	192	191	0.4	0.2	4.832	A
			2	2, 3, 4	276	1000	0.276	276	285	0.6	0.3	5.700	A
	Exit	1	1		536			536	527	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	204	1000	0.204	204	205	0.2	0.2	4.319	A
			2	1, 3, 4	294	1000	0.294	293	304	0.5	0.6	4.920	A
		2	1	(1, 2, 3, 4)	498			498	509	0.0	0.0	0.036	A
	Exit	1	1		434			434	436	0.0	0.0	0.000	A
2	Entry	1	1	3	349	1002	0.349	349	359	0.7	0.5	4.918	A
			2	1, 2, 3, 4	367	1002	0.366	368	375	0.8	0.5	4.913	A
	Exit	1	1		1086			1086	1094	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	543	1588	0.342	543	544	0.9	0.5	3.922	A
			2	2, 3	1070	1588	0.674	1076	1084	8.3	2.6	10.727	B
	Exit	1	1		1273			1273	1289	0.0	0.0	0.000	A
4	Entry	1	1	1	157	1000	0.157	159	161	0.2	0.1	4.829	A
			2	2, 3, 4	239	1000	0.239	240	237	0.3	0.4	5.287	A
	Exit	1	1		439			439	449	0.0	0.0	0.000	A

Alternative DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	6.68	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Alternative DM	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	695	100.000
2		ONE HOUR	✓	1201	100.000
3		ONE HOUR	✓	1316	100.000
4		ONE HOUR	✓	850	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	45	487	163
	2	18	0	1183	0
	3	291	736	26	263
	4	326	0	524	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.46	1.1	A	638	957
2	7.88	3.3	A	1100	1650
3	5.14	2.5	A	1208	1812
4	8.35	2.7	A	786	1179

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	527	132	956	520	516	480	0.0	1.1	4.522	A
2	917	229	901	919	911	576	0.0	1.1	5.403	A
3	997	249	131	994	989	1689	0.0	1.3	3.617	A
4	637	159	800	636	639	323	0.0	1.1	5.933	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	644	161	1204	640	634	544	1.1	1.1	4.728	A
2	1091	273	1117	1093	1089	727	1.1	1.4	6.239	A
3	1211	303	157	1215	1182	2054	1.3	1.6	4.210	A
4	756	189	990	757	756	381	1.1	1.4	6.896	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	767	192	1438	774	773	718	1.1	0.9	5.458	A
2	1299	325	1322	1313	1304	889	1.4	2.6	7.881	A
3	1470	367	204	1469	1438	2431	1.6	2.5	5.144	A
4	948	237	1215	940	933	458	1.4	2.7	8.310	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	755	189	1408	755	767	713	0.9	0.9	5.352	A
2	1322	330	1309	1311	1300	852	2.6	3.3	7.655	A
3	1435	359	194	1431	1436	2427	2.5	2.3	5.011	A
4	957	239	1164	956	963	461	2.7	2.2	8.350	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	601	150	1157	608	618	546	0.9	0.5	4.793	A
2	1069	267	1071	1083	1076	693	3.3	2.0	6.392	A
3	1161	290	165	1163	1190	1969	2.3	1.4	4.186	A
4	765	191	943	760	762	385	2.2	1.7	7.039	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	532	133	962	532	534	473	0.5	0.8	4.779	A
2	904	226	923	904	910	573	2.0	1.2	5.276	A
3	973	243	134	971	974	1693	1.4	0.9	3.600	A
4	655	164	779	657	633	327	1.7	1.2	6.199	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	238	1001	0.238	235	233	0.0	0.5	4.296	A
			2	1, 3, 4	289	1001	0.289	285	284	0.0	0.6	4.704	A
		2	1	(1, 2, 3, 4)	527			527	521	0.0	0.0	0.003	A
	Exit	1	1		480			480	476	0.0	0.0	0.000	A
2	Entry	1	1	3	457	1000	0.457	457	455	0.0	0.5	5.232	A
			2	1, 2, 3, 4	458	1000	0.458	462	455	0.0	0.6	5.573	A
	Exit	1	1		576			576	587	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	429	1614	0.266	426	414	0.0	0.5	3.446	A
			2	2, 3	567	1614	0.351	566	575	0.0	0.8	3.740	A
	Exit	1	1		1689			1689	1675	0.0	0.0	0.000	A
4	Entry	1	1	1	247	1000	0.247	247	246	0.0	0.3	5.250	A
			2	2, 3, 4	389	1000	0.389	390	393	0.0	0.8	6.361	A
	Exit	1	1		323			323	317	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	293	1000	0.293	293	288	0.5	0.4	4.562	A
			2	1, 3, 4	351	1000	0.351	348	347	0.6	0.7	4.834	A
		2	1	(1, 2, 3, 4)	644			644	634	0.0	0.0	0.012	A
	Exit	1	1		544			544	554	0.0	0.0	0.000	A
2	Entry	1	1	3	540	1000	0.540	541	549	0.5	0.8	6.152	A
			2	1, 2, 3, 4	551	1000	0.551	553	540	0.6	0.6	6.327	A
	Exit	1	1		727			727	704	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	504	1598	0.315	506	498	0.5	0.4	3.632	A
			2	2, 3	707	1598	0.443	709	684	0.8	1.2	4.628	A
	Exit	1	1		2054			2054	2020	0.0	0.0	0.000	A
4	Entry	1	1	1	265	1000	0.265	263	277	0.3	0.5	5.538	A
			2	2, 3, 4	491	1000	0.491	495	479	0.8	0.9	7.698	A
	Exit	1	1		381			381	384	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	346	1000	0.346	349	346	0.4	0.4	5.230	A
			2	1, 3, 4	422	1000	0.422	425	427	0.7	0.5	5.471	A
		2	1	(1, 2, 3, 4)	767			768	773	0.0	0.0	0.098	A
	Exit	1	1		718			718	694	0.0	0.0	0.000	A
2	Entry	1	1	3	661	1000	0.661	665	647	0.8	1.5	7.922	A
			2	1, 2, 3, 4	637	1000	0.637	649	657	0.6	1.1	7.841	A
	Exit	1	1		889			889	862	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	612	1569	0.390	607	598	0.4	1.2	4.035	A
			2	2, 3	858	1569	0.547	862	840	1.2	1.3	5.935	A
	Exit	1	1		2431			2431	2432	0.0	0.0	0.000	A
4	Entry	1	1	1	369	1000	0.369	365	359	0.5	1.0	6.413	A
			2	2, 3, 4	578	1000	0.578	576	574	0.9	1.7	9.484	A
	Exit	1	1		458			458	460	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	346	1000	0.346	346	346	0.4	0.4	4.963	A
			2	1, 3, 4	408	1000	0.408	408	421	0.5	0.5	5.420	A
		2	1	(1, 2, 3, 4)	755			755	767	0.0	0.0	0.138	A
	Exit	1	1		713			713	703	0.0	0.0	0.000	A
2	Entry	1	1	3	671	1000	0.671	665	653	1.5	1.5	7.550	A
			2	1, 2, 3, 4	651	1000	0.651	646	647	1.1	1.8	7.760	A
	Exit	1	1		852			852	852	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	608	1576	0.386	604	608	1.2	1.0	4.310	A
			2	2, 3	827	1576	0.525	825	828	1.3	1.3	5.523	A
	Exit	1	1		2427			2427	2444	0.0	0.0	0.000	A
4	Entry	1	1	1	372	1000	0.372	375	364	1.0	0.5	6.678	A
			2	2, 3, 4	586	1000	0.586	581	599	1.7	1.7	9.362	A
	Exit	1	1		461			461	466	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	259	1000	0.259	263	270	0.4	0.3	4.613	A
			2	1, 3, 4	342	1000	0.342	345	348	0.5	0.2	4.905	A
		2	1	(1, 2, 3, 4)	601			601	617	0.0	0.0	0.016	A
	Exit	1	1		546			546	564	0.0	0.0	0.000	A
2	Entry	1	1	3	531	1000	0.531	529	536	1.5	1.0	6.379	A
			2	1, 2, 3, 4	538	1000	0.538	534	540	1.8	1.0	6.404	A
	Exit	1	1		693			693	704	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	481	1593	0.302	483	501	1.0	0.6	3.890	A
			2	2, 3	679	1593	0.427	680	689	1.3	0.8	4.401	A
	Exit	1	1		1969			1969	1992	0.0	0.0	0.000	A
4	Entry	1	1	1	285	1000	0.285	283	288	0.5	0.6	5.663	A
			2	2, 3, 4	480	1000	0.480	477	474	1.7	1.2	7.876	A
	Exit	1	1		385			385	387	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	240	1001	0.240	241	237	0.3	0.3	4.798	A
			2	1, 3, 4	291	1001	0.291	290	297	0.2	0.5	4.738	A
		2	1	(1, 2, 3, 4)	532			532	536	0.0	0.0	0.015	A
	Exit	1	1		473			473	466	0.0	0.0	0.000	A
2	Entry	1	1	3	447	1000	0.447	448	443	1.0	0.5	5.474	A
			2	1, 2, 3, 4	458	1000	0.458	456	467	1.0	0.7	5.087	A
	Exit	1	1		573			573	577	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	419	1612	0.260	419	412	0.6	0.4	3.250	A
			2	2, 3	553	1612	0.343	554	562	0.8	0.5	3.859	A
	Exit	1	1		1693			1693	1690	0.0	0.0	0.000	A
4	Entry	1	1	1	245	1000	0.245	247	237	0.6	0.4	5.198	A
			2	2, 3, 4	410	1000	0.410	411	396	1.2	0.8	6.801	A
	Exit	1	1		327			327	318	0.0	0.0	0.000	A

Alternative DS, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	25.62	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Alternative DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	711	100.000
2		ONE HOUR	✓	1056	100.000
3		ONE HOUR	✓	2114	100.000
4		ONE HOUR	✓	502	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	15	491	205
	2	40	3	1011	2
	3	322	1370	6	416
	4	219	3	280	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.45	1.3	A	654	980
2	6.72	2.4	A	972	1458
3	46.61	33.8	E	1944	2916
4	5.72	1.1	A	464	696

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	527	132	1257	528	536	429	0.0	0.7	4.666	A
2	804	201	733	806	797	1051	0.0	1.2	5.045	A
3	1585	396	188	1591	1585	1351	0.0	2.7	6.464	A
4	374	93	1311	375	377	469	0.0	0.5	4.922	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	629	157	1485	627	637	537	0.7	1.0	5.019	A
2	939	235	870	941	947	1241	1.2	1.4	5.589	A
3	1893	473	225	1893	1883	1586	2.7	5.2	9.546	A
4	454	113	1565	456	457	553	0.5	0.5	5.277	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	791	198	1797	787	784	653	1.0	1.2	5.451	A
2	1175	294	1086	1173	1165	1499	1.4	2.4	6.721	A
3	2362	591	274	2305	2259	1984	5.2	25.0	27.871	D
4	562	140	1886	563	553	694	0.5	0.9	5.719	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	786	197	1804	786	789	648	1.2	1.3	5.427	A
2	1157	289	1090	1158	1163	1500	2.4	2.1	6.662	A
3	2333	583	279	2293	2288	1969	25.0	33.8	46.611	E
4	576	144	1877	575	558	694	0.9	1.1	5.656	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	644	161	1525	645	645	521	1.3	0.9	5.065	A
2	950	238	884	948	954	1286	2.1	1.6	5.576	A
3	1908	477	223	1941	2015	1609	33.8	7.9	25.698	D
4	447	112	1600	446	452	565	1.1	0.8	5.205	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	544	136	1235	542	544	438	0.9	0.9	4.789	A
2	805	201	739	803	799	1037	1.6	1.4	5.127	A
3	1580	395	188	1576	1611	1354	7.9	3.0	7.097	A
4	373	93	1300	373	377	465	0.8	0.5	4.754	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

07:45 - 08:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	213	1000	0.213	213	218	0.0	0.2	4.365	A
			2	1, 3, 4	314	1000	0.314	314	318	0.0	0.5	4.821	A
		2	1	(1, 2, 3, 4)	527			528	539	0.0	0.0	0.030	A
	Exit	1	1		429			429	436	0.0	0.0	0.000	A
2	Entry	1	1	3	394	1001	0.394	395	390	0.0	0.7	5.036	A
			2	1, 2, 3, 4	410	1001	0.410	411	408	0.0	0.5	5.053	A
	Exit	1	1		1051			1051	1042	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	552	1579	0.350	552	554	0.0	0.6	3.932	A
			2	2, 3	1033	1579	0.654	1039	1031	0.0	2.1	7.825	A
	Exit	1	1		1351			1351	1349	0.0	0.0	0.000	A
4	Entry	1	1	1	159	1000	0.159	160	163	0.0	0.2	4.742	A
			2	2, 3, 4	214	1000	0.214	215	215	0.0	0.3	5.057	A
	Exit	1	1		469			469	468	0.0	0.0	0.000	A

08:00 - 08:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	258	1000	0.258	257	263	0.2	0.4	4.510	A
			2	1, 3, 4	372	1000	0.372	370	375	0.5	0.6	5.305	A
		2	1	(1, 2, 3, 4)	629			629	639	0.0	0.0	0.043	A
	Exit	1	1		537			537	528	0.0	0.0	0.000	A
2	Entry	1	1	3	467	1000	0.467	469	468	0.7	0.7	5.542	A
			2	1, 2, 3, 4	471	1000	0.471	472	479	0.5	0.8	5.635	A
	Exit	1	1		1241			1241	1235	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	663	1557	0.426	663	660	0.6	0.9	4.707	A
			2	2, 3	1230	1557	0.790	1230	1222	2.1	4.3	12.133	B
	Exit	1	1		1586			1586	1604	0.0	0.0	0.000	A
4	Entry	1	1	1	202	1000	0.202	204	204	0.2	0.2	5.123	A
			2	2, 3, 4	251	1000	0.251	252	253	0.3	0.3	5.400	A
	Exit	1	1		553			553	558	0.0	0.0	0.000	A

08:15 - 08:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	329	1000	0.329	327	327	0.4	0.5	4.859	A
			2	1, 3, 4	461	1000	0.461	460	457	0.6	0.7	5.642	A
		2	1	(1, 2, 3, 4)	791			790	785	0.0	0.1	0.133	A
	Exit	1	1		653			653	637	0.0	0.0	0.000	A
2	Entry	1	1	3	583	1000	0.583	583	577	0.7	1.1	6.603	A
			2	1, 2, 3, 4	592	1000	0.592	590	589	0.8	1.3	6.836	A
	Exit	1	1		1499			1499	1464	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	828	1527	0.542	825	811	0.9	1.5	5.775	A
			2	2, 3	1534	1527	1.005	1480	1447	4.3	23.5	39.710	E
	Exit	1	1		1984			1984	1973	0.0	0.0	0.000	A
4	Entry	1	1	1	249	1000	0.249	249	240	0.2	0.3	5.606	A
			2	2, 3, 4	313	1000	0.313	314	312	0.3	0.5	5.806	A
	Exit	1	1		694			694	686	0.0	0.0	0.000	A

08:30 - 08:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	327	1000	0.327	327	330	0.5	0.5	4.782	A
			2	1, 3, 4	459	1000	0.459	459	459	0.7	0.8	5.686	A
		2	1	(1, 2, 3, 4)	786			787	790	0.1	0.0	0.124	A
	Exit	1	1		648			648	643	0.0	0.0	0.000	A
2	Entry	1	1	3	568	1000	0.568	569	575	1.1	1.0	6.553	A
			2	1, 2, 3, 4	589	1000	0.589	589	588	1.3	1.2	6.769	A
	Exit	1	1		1500			1500	1491	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	812	1524	0.533	812	815	1.5	1.4	5.740	A
			2	2, 3	1521	1524	0.998	1481	1473	23.5	32.4	68.698	F
	Exit	1	1		1969			1969	1975	0.0	0.0	0.000	A
4	Entry	1	1	1	254	1000	0.254	255	244	0.3	0.4	5.183	A
			2	2, 3, 4	321	1000	0.321	320	314	0.5	0.6	6.026	A
	Exit	1	1		694			694	690	0.0	0.0	0.000	A

08:45 - 09:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	266	1000	0.266	266	263	0.5	0.3	4.687	A
			2	1, 3, 4	379	1000	0.379	379	382	0.8	0.5	5.236	A
		2	1	(1, 2, 3, 4)	644			644	643	0.0	0.0	0.053	A
	Exit	1	1		521			521	526	0.0	0.0	0.000	A
2	Entry	1	1	3	463	1000	0.463	461	469	1.0	0.8	5.512	A
			2	1, 2, 3, 4	487	1000	0.487	486	485	1.2	0.8	5.637	A
	Exit	1	1		1286			1286	1357	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	667	1558	0.428	668	670	1.4	1.0	4.714	A
			2	2, 3	1241	1558	0.797	1274	1345	32.4	6.9	36.988	E
	Exit	1	1		1609			1609	1615	0.0	0.0	0.000	A
4	Entry	1	1	1	198	1000	0.198	198	200	0.4	0.3	4.795	A
			2	2, 3, 4	249	1000	0.249	248	252	0.6	0.5	5.532	A
	Exit	1	1		565			565	567	0.0	0.0	0.000	A

09:00 - 09:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	223	1000	0.223	222	220	0.3	0.3	4.447	A
			2	1, 3, 4	321	1000	0.321	319	325	0.5	0.6	4.966	A
		2	1	(1, 2, 3, 4)	544			544	544	0.0	0.0	0.034	A
	Exit	1	1		438			438	437	0.0	0.0	0.000	A
2	Entry	1	1	3	399	1000	0.399	398	392	0.8	0.7	5.114	A
			2	1, 2, 3, 4	406	1000	0.406	405	407	0.8	0.8	5.139	A
	Exit	1	1		1037			1037	1067	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	550	1579	0.349	550	556	1.0	0.7	3.940	A
			2	2, 3	1029	1579	0.652	1026	1055	6.9	2.3	8.788	A
	Exit	1	1		1354			1354	1353	0.0	0.0	0.000	A
4	Entry	1	1	1	166	1000	0.166	168	167	0.3	0.1	4.565	A
			2	2, 3, 4	207	1000	0.207	206	210	0.5	0.3	4.904	A
	Exit	1	1		465			465	474	0.0	0.0	0.000	A

Alternative DS, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Large Roundabout		1, 2, 3, 4	7.26	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
1	1822	0.00
2	1020	145.00
3	252	0.00
4	1878	130.00

Slope / Intercept / Capacity

[same as above]

Lane Simulation: Arm options

[same as above]

Lanes

[same as above]

Entry Lane slope and intercept

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Alternative DS	PM	ONE HOUR	16:45	18:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	754	100.000
2		ONE HOUR	✓	1290	100.000
3		ONE HOUR	✓	1145	100.000
4		ONE HOUR	✓	834	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	45	476	233
	2	18	0	1272	0
	3	296	736	26	87
	4	333	0	501	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.95	1.7	A	695	1042
2	9.38	4.8	A	1183	1775
3	5.13	1.8	A	1038	1557
4	8.11	2.6	A	760	1140

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	589	147	935	588	580	496	0.0	0.9	4.747	A
2	967	242	944	965	970	580	0.0	1.5	5.591	A
3	849	212	193	848	856	1716	0.0	1.0	3.783	A
4	630	158	798	633	637	243	0.0	1.0	6.037	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	678	170	1126	679	674	578	0.9	1.1	5.219	A
2	1163	291	1118	1167	1172	688	1.5	1.9	6.537	A
3	1015	254	223	1013	1017	2062	1.0	1.4	4.152	A
4	752	188	954	750	749	282	1.0	1.5	7.038	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	841	210	1397	841	839	700	1.1	1.5	5.949	A
2	1407	352	1375	1401	1398	862	1.9	4.0	8.633	A
3	1258	315	285	1261	1254	2492	1.4	1.8	5.123	A
4	915	229	1185	911	917	361	1.5	2.6	8.112	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	837	209	1379	829	825	705	1.5	1.7	5.750	A
2	1430	357	1355	1413	1416	853	4.0	4.8	9.357	A
3	1242	310	287	1248	1257	2482	1.8	1.6	5.127	A
4	905	226	1179	904	919	355	2.6	2.1	7.923	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	667	167	1121	666	687	588	1.7	1.0	5.304	A
2	1146	287	1083	1138	1169	705	4.8	2.5	6.715	A
3	1019	255	223	1019	1027	1998	1.6	1.2	4.244	A
4	739	185	969	740	749	273	2.1	1.5	6.821	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	557	139	919	554	568	490	1.0	1.0	4.893	A
2	987	247	907	982	985	565	2.5	1.8	5.562	A
3	844	211	193	846	858	1696	1.2	0.8	3.603	A
4	620	155	794	615	624	246	1.5	1.1	5.979	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	241	1001	0.241	240	237	0.0	0.4	4.505	A
			2	1, 3, 4	348	1001	0.348	348	343	0.0	0.5	4.865	A
		2	1	(1, 2, 3, 4)	589			589	584	0.0	0.0	0.030	A
	Exit	1	1		496			496	493	0.0	0.0	0.000	A
2	Entry	1	1	3	476	1000	0.476	476	481	0.0	0.7	5.590	A
			2	1, 2, 3, 4	490	1000	0.490	489	489	0.0	0.8	5.591	A
	Exit	1	1		580			580	585	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	282	1576	0.179	282	286	0.0	0.2	3.146	A
			2	2, 3	567	1576	0.360	566	570	0.0	0.7	4.102	A
	Exit	1	1		1716			1716	1723	0.0	0.0	0.000	A
4	Entry	1	1	1	262	1000	0.262	264	258	0.0	0.3	5.469	A
			2	2, 3, 4	368	1000	0.368	369	378	0.0	0.7	6.423	A
	Exit	1	1		243			243	243	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	289	1000	0.289	289	282	0.4	0.4	4.603	A
			2	1, 3, 4	390	1000	0.390	390	391	0.5	0.7	5.500	A
		2	1	(1, 2, 3, 4)	678			679	674	0.0	0.0	0.093	A
	Exit	1	1		578			578	582	0.0	0.0	0.000	A
2	Entry	1	1	3	584	1000	0.584	587	584	0.7	0.9	6.519	A
			2	1, 2, 3, 4	578	1000	0.578	580	588	0.8	1.0	6.555	A
	Exit	1	1		688			688	690	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	343	1558	0.220	341	344	0.2	0.4	3.274	A
			2	2, 3	673	1558	0.432	672	673	0.7	1.0	4.598	A
	Exit	1	1		2062			2062	2054	0.0	0.0	0.000	A
4	Entry	1	1	1	296	1000	0.296	295	300	0.3	0.6	5.849	A
			2	2, 3, 4	457	1000	0.457	454	449	0.7	1.0	7.835	A
	Exit	1	1		282			282	286	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	355	1000	0.355	355	354	0.4	0.6	5.242	A
			2	1, 3, 4	487	1000	0.487	485	485	0.7	0.9	6.087	A
		2	1	(1, 2, 3, 4)	841			842	841	0.0	0.0	0.218	A
	Exit	1	1		700			700	705	0.0	0.0	0.000	A
2	Entry	1	1	3	700	1000	0.700	698	699	0.9	1.9	8.601	A
			2	1, 2, 3, 4	707	1000	0.707	703	699	1.0	2.1	8.665	A
	Exit	1	1		862			862	854	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	423	1521	0.278	424	424	0.4	0.3	3.678	A
			2	2, 3	836	1521	0.550	837	829	1.0	1.5	5.856	A
	Exit	1	1		2492			2492	2488	0.0	0.0	0.000	A
4	Entry	1	1	1	354	1000	0.354	352	358	0.6	0.9	6.329	A
			2	2, 3, 4	560	1000	0.560	559	559	1.0	1.7	9.252	A
	Exit	1	1		361			361	360	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	351	1000	0.351	349	345	0.6	0.6	5.098	A
			2	1, 3, 4	485	1000	0.485	481	480	0.9	1.0	5.887	A
		2	1	(1, 2, 3, 4)	837			836	826	0.0	0.1	0.190	A
	Exit	1	1		705			705	714	0.0	0.0	0.000	A
2	Entry	1	1	3	716	1000	0.716	708	706	1.9	2.3	9.315	A
			2	1, 2, 3, 4	714	1000	0.714	706	710	2.1	2.5	9.399	A
	Exit	1	1		853			853	855	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	411	1520	0.271	415	421	0.3	0.4	3.546	A
			2	2, 3	830	1520	0.546	833	836	1.5	1.3	5.925	A
	Exit	1	1		2482			2482	2488	0.0	0.0	0.000	A
4	Entry	1	1	1	359	1000	0.359	359	369	0.9	0.7	6.820	A
			2	2, 3, 4	546	1000	0.546	546	550	1.7	1.4	8.663	A
	Exit	1	1		355			355	360	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	281	1000	0.281	280	287	0.6	0.4	4.894	A
			2	1, 3, 4	386	1000	0.386	387	401	1.0	0.6	5.403	A
		2	1	(1, 2, 3, 4)	667			668	685	0.1	0.0	0.116	A
	Exit	1	1		588			588	585	0.0	0.0	0.000	A
2	Entry	1	1	3	564	1000	0.564	561	579	2.3	1.2	6.746	A
			2	1, 2, 3, 4	582	1000	0.582	577	590	2.5	1.2	6.684	A
	Exit	1	1		705			705	703	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	335	1558	0.215	335	341	0.4	0.3	3.248	A
			2	2, 3	683	1558	0.439	685	686	1.3	0.9	4.742	A
	Exit	1	1		1998			1998	2057	0.0	0.0	0.000	A
4	Entry	1	1	1	303	1000	0.303	304	302	0.7	0.6	5.955	A
			2	2, 3, 4	436	1000	0.436	437	447	1.4	0.9	7.408	A
	Exit	1	1		273			273	287	0.0	0.0	0.000	A

18:00 - 18:15

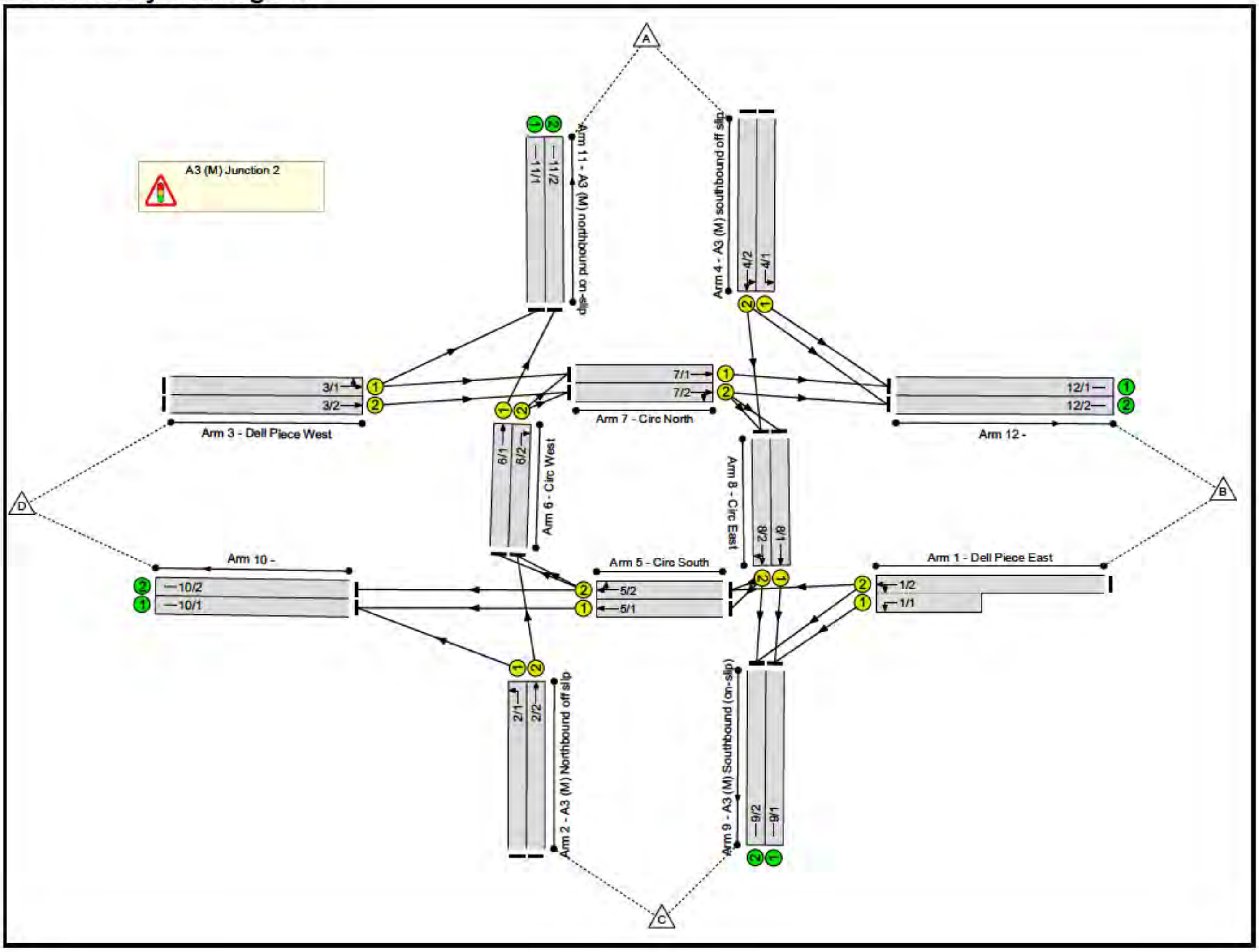
Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2, 3	224	1003	0.223	223	233	0.4	0.3	4.378	A
			2	1, 3, 4	333	1003	0.332	330	336	0.6	0.6	5.150	A
		2	1	(1, 2, 3, 4)	557			556	568	0.0	0.0	0.060	A
	Exit	1	1		490			490	493	0.0	0.0	0.000	A
2	Entry	1	1	3	484	1000	0.484	482	492	1.2	0.9	5.543	A
			2	1, 2, 3, 4	502	1000	0.502	500	493	1.2	0.9	5.581	A
	Exit	1	1		565			565	582	0.0	0.0	0.000	A
3	Entry	1	1	1, 4	291	1576	0.184	291	292	0.3	0.3	3.031	A
			2	2, 3	554	1576	0.351	555	566	0.9	0.5	3.897	A
	Exit	1	1		1696			1696	1715	0.0	0.0	0.000	A
4	Entry	1	1	1	253	1000	0.253	251	254	0.6	0.4	5.283	A
			2	2, 3, 4	367	1000	0.367	364	371	0.9	0.7	6.451	A
	Exit	1	1		246			246	246	0.0	0.0	0.000	A

Full Input Data And Results

User and Project Details

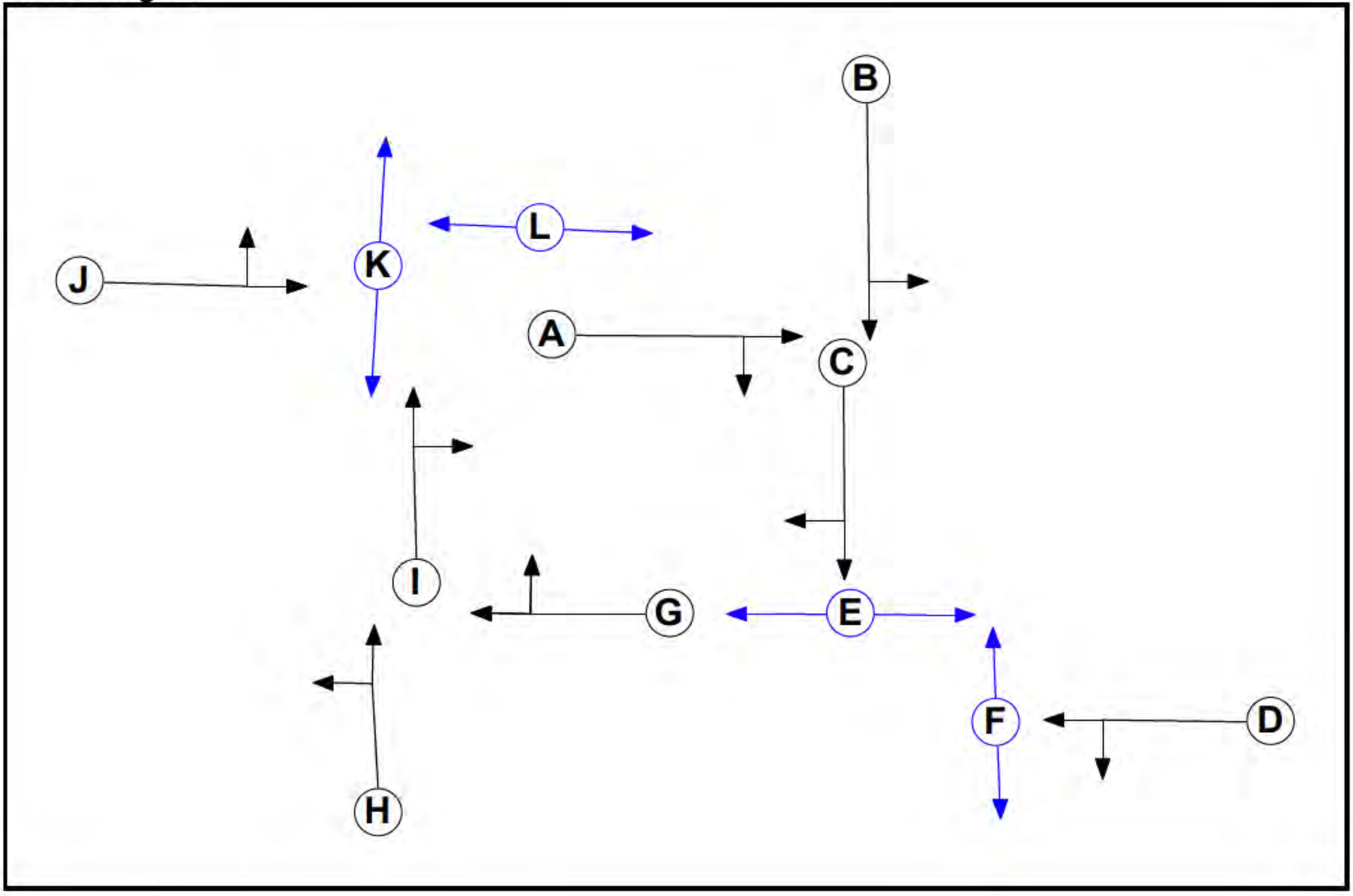
Project:	
Title:	
Location:	
Additional detail:	
File name:	A3 (M) J2.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		6	2
D	Traffic	2		6	2
E	Pedestrian	2		6	6
F	Pedestrian	2		6	6
G	Traffic	3		7	7
H	Traffic	3		7	7
I	Traffic	4		6	2
J	Traffic	4		6	2
K	Pedestrian	4		6	6
L	Pedestrian	4		6	6

Full Input Data And Results

Phase Intergreens Matrix

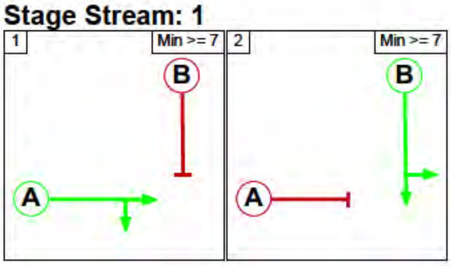
		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		6	-	-	-	-	-	-	-	-	-	-
	B	6		-	-	-	-	-	-	-	-	-	-
	C	-	-		6	6	-	-	-	-	-	-	-
	D	-	-	6		-	6	-	-	-	-	-	-
	E	-	-	10	-		-	-	-	-	-	-	-
	F	-	-	-	10	-		-	-	-	-	-	-
	G	-	-	-	-	-	-		6	-	-	-	-
	H	-	-	-	-	-	-	6		-	-	-	-
	I	-	-	-	-	-	-	-	-		6	-	6
	J	-	-	-	-	-	-	-	-	6		6	-
	K	-	-	-	-	-	-	-	-	-	10		-
	L	-	-	-	-	-	-	-	-	10	-	-	

Phases in Stage

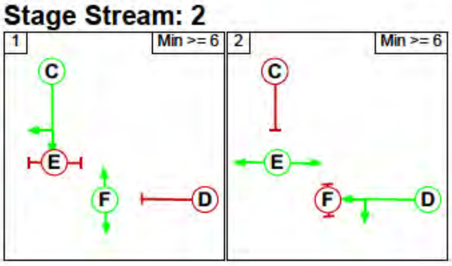
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C F
2	2	D E
3	1	G
3	2	H
4	1	I K
4	2	J L

Stage Diagram

Stage Stream: 1

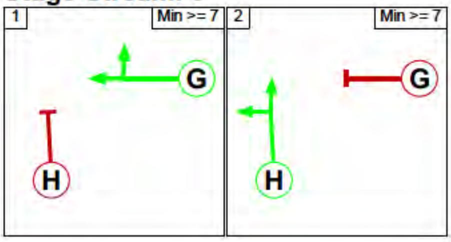


Stage Stream: 2

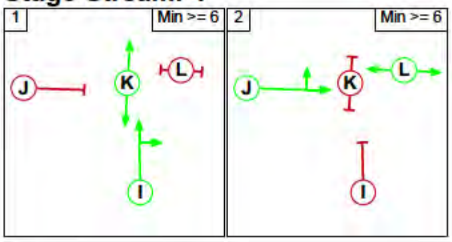


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	4	4
2	1	D	Losing	4	4

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	I	Losing	4	4
2	1	J	Losing	4	4

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		6
	2	6	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		10
	2	10	

Full Input Data And Results

Stage Stream: 3

		To Stage	
		1	2
From Stage	1		6
	2	6	

Stage Stream: 4

		To Stage	
		1	2
From Stage	1		10
	2	10	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A3 (M) Junction 2
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: A3 (M) Junction 2													
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Dell Piece East)	U	D	2	3	8.7	User	1900	-	-	-	-	-
1/2 (Dell Piece East)	U	D	2	3	60.0	User	1900	-	-	-	-	-
2/1 (A3 (M) Northbound off slip)	U	H	2	3	60.0	User	1800	-	-	-	-	-
2/2 (A3 (M) Northbound off slip)	U	H	2	3	60.0	User	1800	-	-	-	-	-
3/1 (Dell Piece West)	U	J	2	3	60.0	User	1800	-	-	-	-	-
3/2 (Dell Piece West)	U	J	2	3	60.0	User	1800	-	-	-	-	-
4/1 (A3 (M) southbound off slip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/2 (A3 (M) southbound off slip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
5/1 (Circ South)	U	G	2	3	15.7	User	1900	-	-	-	-	-
5/2 (Circ South)	U	G	2	3	15.7	User	1900	-	-	-	-	-
6/1 (Circ West)	U	I	2	3	7.0	User	1800	-	-	-	-	-
6/2 (Circ West)	U	I	2	3	7.0	User	1800	-	-	-	-	-
7/1 (Circ North)	U	A	2	3	15.7	User	1800	-	-	-	-	-
7/2 (Circ North)	U	A	2	3	15.7	User	1800	-	-	-	-	-
8/1 (Circ East)	U	C	2	3	7.0	User	1900	-	-	-	-	-
8/2 (Circ East)	U	C	2	3	7.0	User	1900	-	-	-	-	-
9/1 (A3 (M) Southbound (on-slip))	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A3 (M) Southbound (on-slip))	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-

10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A3 (M) northbound on-slip)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A3 (M) northbound on-slip)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Alternative DM AM'	08:00	09:00	01:00	
2: 'Alternative DM PM'	17:00	18:00	01:00	
3: 'Alternative DS AM'	08:00	09:00	01:00	
4: 'Alternative DS PM'	17:00	18:00	01:00	

Scenario 1: 'Alternative DM AM' (FG1: 'Alternative DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	175	1	118	294
	B	353	0	489	214	1056
	C	1	199	2	254	456
	D	256	323	597	2	1178
	Tot.	610	697	1089	588	2984

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: Alternative DM AM
Junction: A3 (M) Junction 2	
1/1 (short)	489
1/2 (with short)	1056(In) 567(Out)
2/1	254
2/2	199
3/1	579
3/2	597
4/1	147
4/2	147
5/1	59
5/2	626
6/1	353
6/2	199
7/1	423
7/2	696
8/1	389
8/2	327
9/1	878
9/2	209
10/1	313
10/2	273
11/1	256
11/2	353
12/1	570
12/2	127

Lane Saturation Flows

Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: 'Alternative DM PM' (FG2: 'Alternative DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	392	3	246	641
	B	227	0	370	335	932
	C	0	449	0	556	1005
	D	183	249	396	5	833
	Tot.	410	1090	769	1142	3411

Traffic Lane Flows

Lane	Scenario 2: Alternative DM PM
Junction: A3 (M) Junction 2	
1/1 (short)	370
1/2 (with short)	932(In) 562(Out)
2/1	556
2/2	449
3/1	414
3/2	414
4/1	320
4/2	321
5/1	123
5/2	685
6/1	227
6/2	449
7/1	456
7/2	638
8/1	198
8/2	447
9/1	568
9/2	201
10/1	679
10/2	458
11/1	183
11/2	227
12/1	776
12/2	314

Full Input Data And Results

Lane Saturation Flows

Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: 'Alternative DS AM' (FG3: 'Alternative DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	159	1	126	286
	B	352	0	455	209	1016
	C	1	197	2	279	479
	D	209	330	642	2	1183
	Tot.	562	686	1100	616	2964

Traffic Lane Flows

Lane	Scenario 3: Alternative DS AM
Junction: A3 (M) Junction 2	
1/1 (short)	455
1/2 (with short)	1016(In) 561(Out)
2/1	279
2/2	197
3/1	539
3/2	642
4/1	143
4/2	143
5/1	63
5/2	624
6/1	352
6/2	197
7/1	429
7/2	740
8/1	350
8/2	419
9/1	805
9/2	293
10/1	342
10/2	272
11/1	209
11/2	352
12/1	572
12/2	114

Lane Saturation Flows

Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 4: 'Alternative DS PM' (FG4: 'Alternative DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	400	3	211	614
	B	227	0	369	318	914
	C	0	418	0	743	1161
	D	224	254	421	5	904
	Tot.	451	1072	793	1277	3593

Traffic Lane Flows

Lane	Scenario 4: Alternative DS PM
Junction: A3 (M) Junction 2	
1/1 (short)	369
1/2 (with short)	914(In) 545(Out)
2/1	743
2/2	418
3/1	449
3/2	450
4/1	307
4/2	307
5/1	105
5/2	651
6/1	227
6/2	418
7/1	434
7/2	659
8/1	211
8/2	424
9/1	580
9/2	213
10/1	848
10/2	424
11/1	224
11/2	227
12/1	741
12/2	331

Lane Saturation Flows

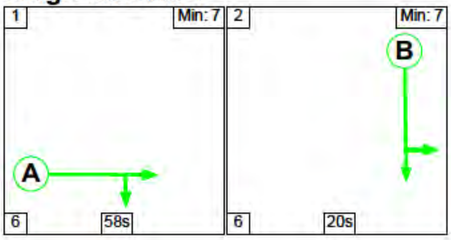
Junction: A3 (M) Junction 2								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Dell Piece East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (Dell Piece East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A3 (M) Northbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A3 (M) Northbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Dell Piece West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Dell Piece West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A3 (M) southbound off slip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A3 (M) southbound off slip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Circ South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Circ South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (Circ West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (Circ West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (Circ North Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (Circ North Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Circ East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (Circ East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A3 (M) Southbound (on-slip) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A3 (M) Southbound (on-slip) Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1 (A3 (M) northbound on-slip Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A3 (M) northbound on-slip Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

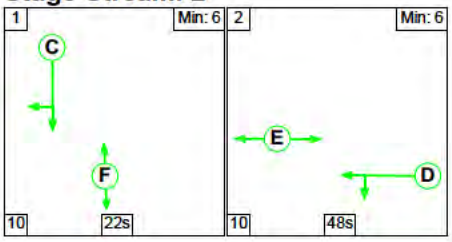
Scenario 1: 'Alternative DM AM' (FG1: 'Alternative DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

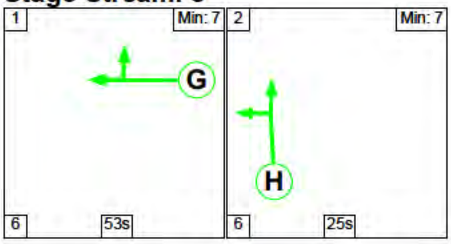
Stage Stream: 1



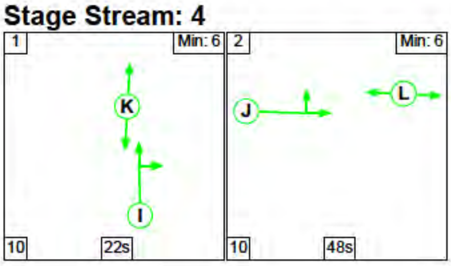
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	58	20
Change Point	15	79

Stage Stream: 2

Stage	1	2
Duration	22	48
Change Point	24	56

Stage Stream: 3

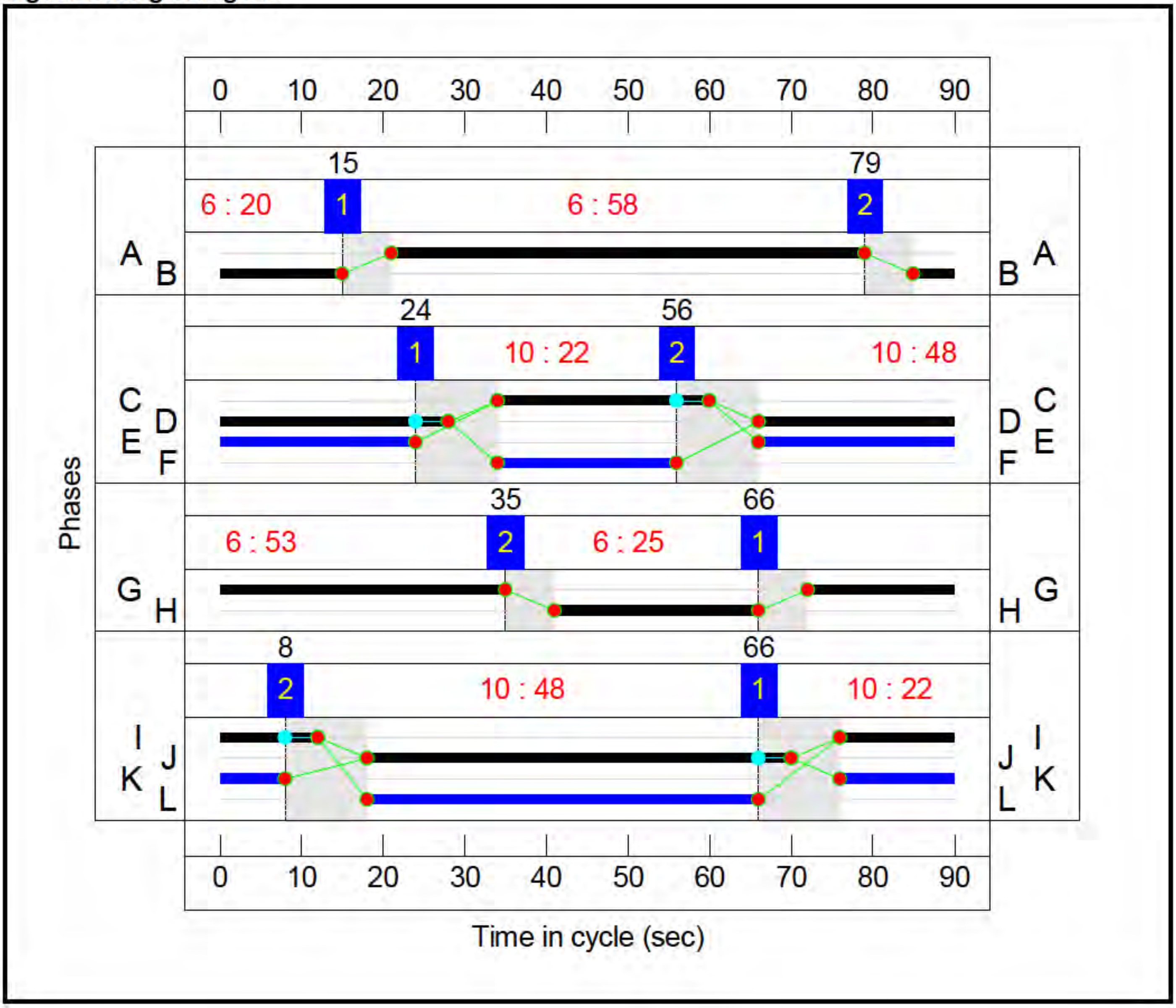
Stage	1	2
Duration	53	25
Change Point	66	35

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	22	48
Change Point	66	8

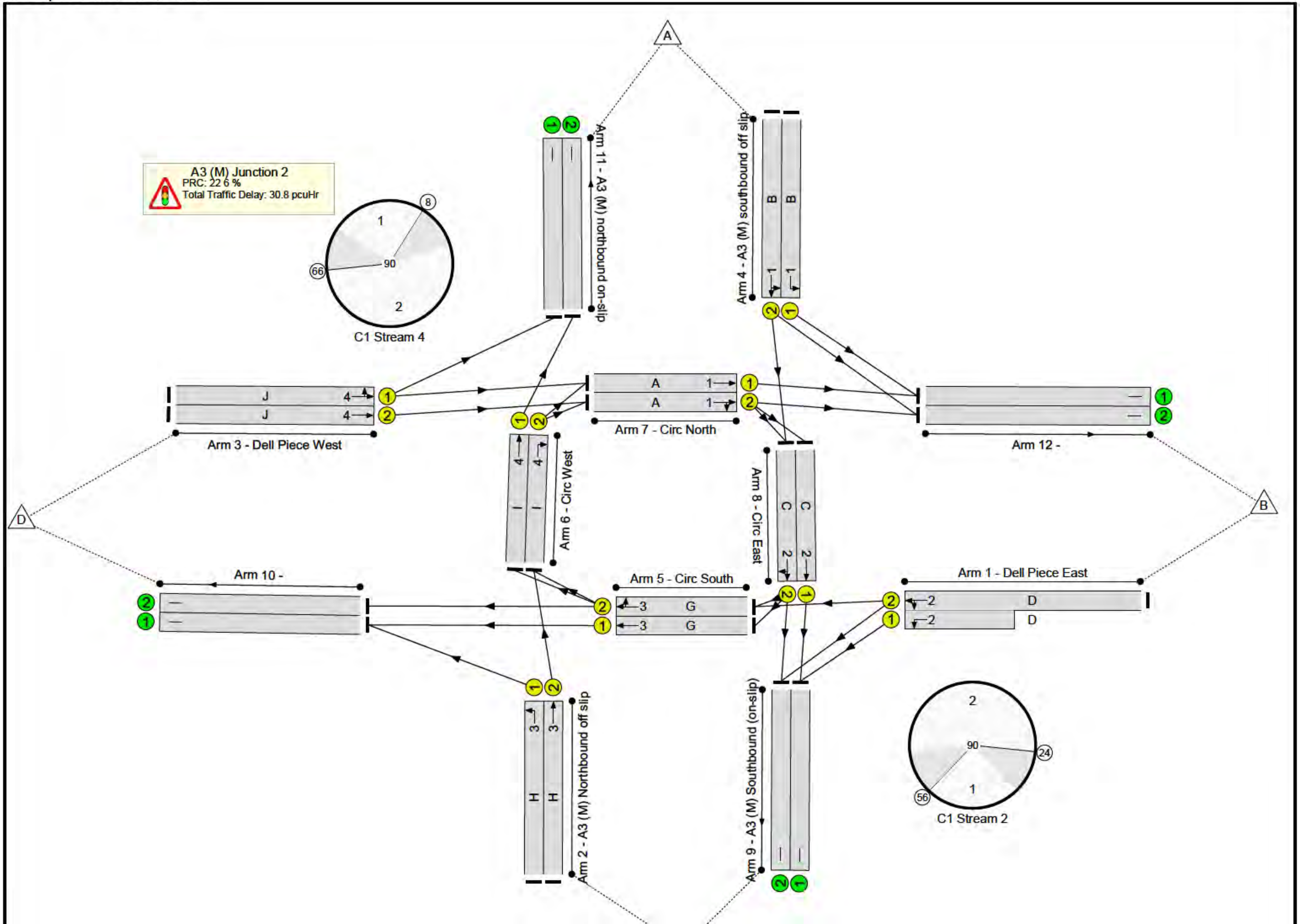
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.4%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.4%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	52	-	1056	1900:1900	772+666	73.4 : 73.4%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	25	-	254	1800	520	48.8%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	25	-	199	1800	520	38.3%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	52	-	579	1800	1060	54.6%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	52	-	597	1800	1060	56.3%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	20	-	147	1800	420	35.0%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	20	-	147	1800	420	35.0%
5/1	Circ South Ahead	U	3	N/A	G		1	53	-	59	1900	1140	5.2%
5/2	Circ South Right Ahead	U	3	N/A	G		1	53	-	626	1900	1140	54.9%
6/1	Circ West Ahead	U	4	N/A	I		1	26	-	353	1800	540	65.4%
6/2	Circ West Right	U	4	N/A	I		1	26	-	199	1800	540	36.9%
7/1	Circ North Ahead	U	1	N/A	A		1	58	-	423	1800	1180	35.8%
7/2	Circ North Right Ahead	U	1	N/A	A		1	58	-	696	1800	1180	59.0%
8/1	Circ East Ahead	U	2	N/A	C		1	26	-	389	1900	570	68.2%
8/2	Circ East Right Ahead	U	2	N/A	C		1	26	-	327	1900	570	57.4%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	878	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	209	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	273	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	256	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	353	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	570	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	127	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**22.2**	**8.5**	**0.0**	**30.8**	-	-	-	-
A3 (M) Junction 2	-	-	**0**	**0**	**0**	**22.2**	**8.5**	**0.0**	**30.8**	-	-	-	-
1/2+1/1	1056	1056	-	-	-	3.1	1.4	-	4.5	15.2	8.2	1.4	9.6
2/1	254	254	-	-	-	1.9	0.5	-	2.3	33.2	5.2	0.5	5.7
2/2	199	199	-	-	-	1.4	0.3	-	1.7	31.2	3.9	0.3	4.2
3/1	579	579	-	-	-	1.8	0.6	-	2.4	14.9	8.7	0.6	9.3
3/2	597	597	-	-	-	1.9	0.6	-	2.5	15.3	9.1	0.6	9.8
4/1	147	147	-	-	-	1.2	0.3	-	1.4	35.4	3.1	0.3	3.3
4/2	147	147	-	-	-	1.2	0.3	-	1.4	35.4	3.1	0.3	3.3
5/1	59	59	-	-	-	0.4	0.0	-	0.4	24.1	1.5	0.0	1.5
5/2	626	626	-	-	-	0.6	0.6	-	1.2	7.0	2.8	0.6	3.4
6/1	353	353	-	-	-	2.1	0.9	-	3.1	31.3	4.0	0.9	4.9
6/2	199	199	-	-	-	1.2	0.3	-	1.5	27.9	5.0	0.3	5.3
7/1	423	423	-	-	-	0.7	0.3	-	1.0	8.1	2.7	0.3	3.0
7/2	696	696	-	-	-	0.7	0.7	-	1.4	7.4	2.8	0.7	3.5
8/1	389	389	-	-	-	2.0	1.1	-	3.1	28.3	5.0	1.1	6.0
8/2	327	327	-	-	-	2.0	0.7	-	2.7	29.8	5.9	0.7	6.6
9/1	878	878	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	209	209	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	273	273	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	256	256	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	353	353	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	570	570	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	127	127	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

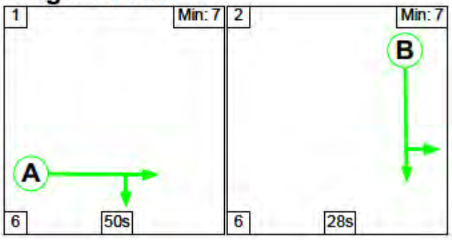
C1	Stream: 1	PRC for Signalled Lanes (%):	52.6	Total Delay for Signalled Lanes (pcuHr):	5.28	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	22.6	Total Delay for Signalled Lanes (pcuHr):	10.24	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	63.9	Total Delay for Signalled Lanes (pcuHr):	5.69	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	37.7	Total Delay for Signalled Lanes (pcuHr):	9.54	Cycle Time (s):	90
		PRC Over All Lanes (%):	22.6	Total Delay Over All Lanes(pcuHr):	30.75		

Full Input Data And Results

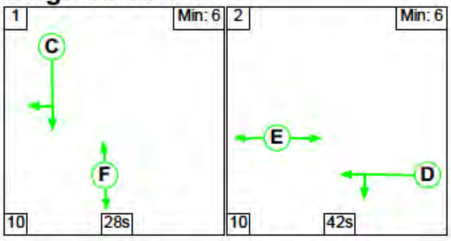
Scenario 2: 'Alternative DM PM' (FG2: 'Alternative DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

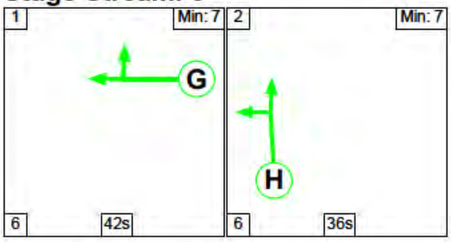
Stage Stream: 1



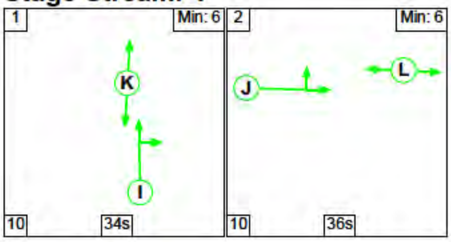
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	50	28
Change Point	16	72

Stage Stream: 2

Stage	1	2
Duration	28	42
Change Point	63	11

Stage Stream: 3

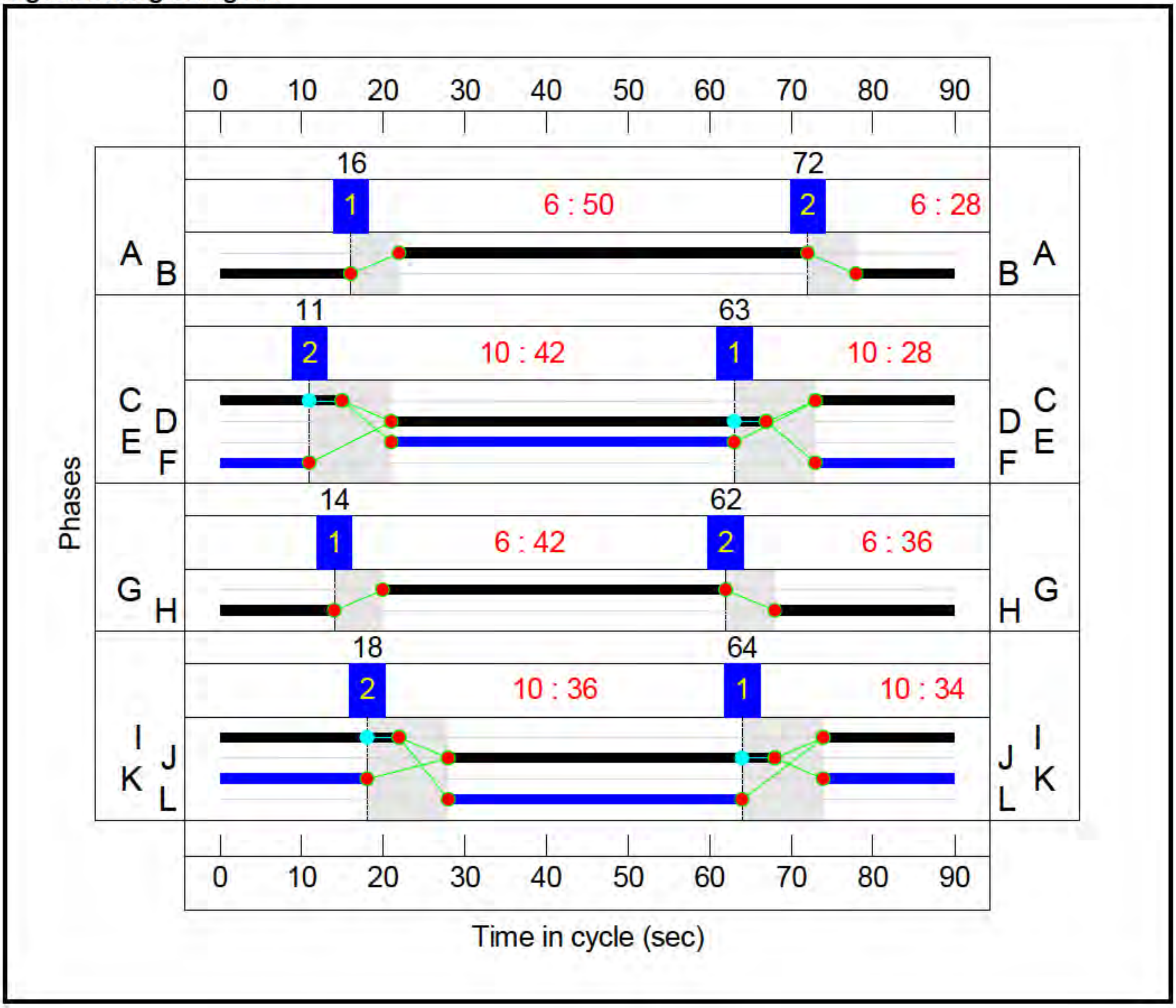
Stage	1	2
Duration	42	36
Change Point	14	62

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	34	36
Change Point	64	18

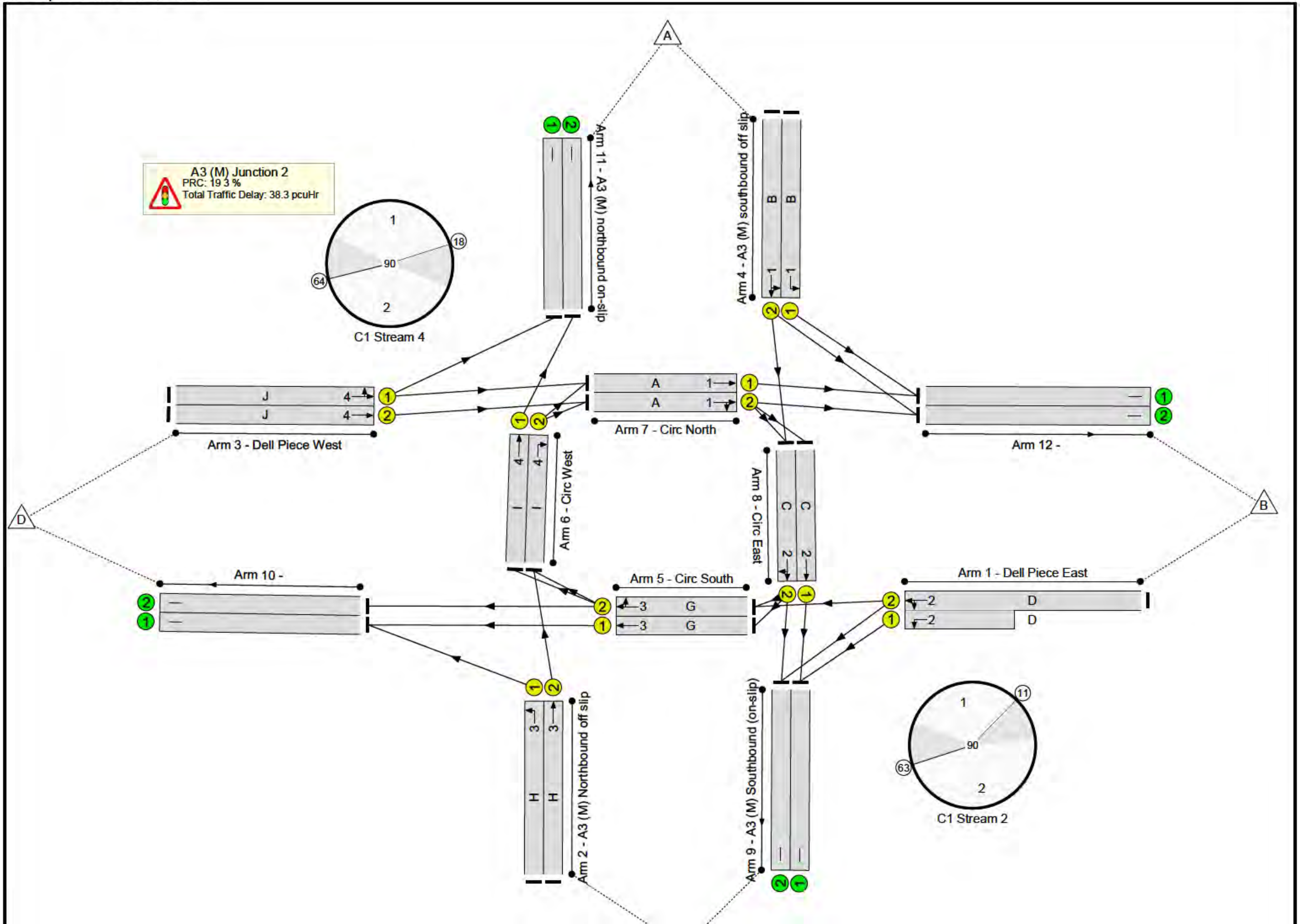
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.5%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.5%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	46	-	932	1900:1900	748+492	75.1 : 75.1%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	36	-	556	1800	740	75.1%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	36	-	449	1800	740	60.7%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	40	-	414	1800	820	50.5%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	40	-	414	1800	820	50.5%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	28	-	320	1800	580	55.2%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	28	-	321	1800	580	55.3%
5/1	Circ South Ahead	U	3	N/A	G		1	42	-	123	1900	908	13.5%
5/2	Circ South Right Ahead	U	3	N/A	G		1	42	-	685	1900	908	75.5%
6/1	Circ West Ahead	U	4	N/A	I		1	38	-	227	1800	780	29.1%
6/2	Circ West Right	U	4	N/A	I		1	38	-	449	1800	780	57.6%
7/1	Circ North Ahead	U	1	N/A	A		1	50	-	456	1800	1020	44.7%
7/2	Circ North Right Ahead	U	1	N/A	A		1	50	-	638	1800	1020	62.5%
8/1	Circ East Ahead	U	2	N/A	C		1	32	-	198	1900	697	28.4%
8/2	Circ East Right Ahead	U	2	N/A	C		1	32	-	447	1900	697	64.2%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	568	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	201	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	679	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	458	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	183	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	227	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	776	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	314	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**27.6**	**10.8**	**0.0**	**38.3**	-	-	-	-
A3 (M) Junction 2	-	-	**0**	**0**	**0**	**27.6**	**10.8**	**0.0**	**38.3**	-	-	-	-
1/2+1/1	932	932	-	-	-	3.6	1.5	-	5.1	19.7	10.3	1.5	11.8
2/1	556	556	-	-	-	3.5	1.5	-	5.0	32.2	11.7	1.5	13.2
2/2	449	449	-	-	-	2.6	0.8	-	3.4	26.9	8.7	0.8	9.5
3/1	414	414	-	-	-	2.0	0.5	-	2.5	21.7	7.2	0.5	7.8
3/2	414	414	-	-	-	2.0	0.5	-	2.5	21.7	7.2	0.5	7.8
4/1	320	320	-	-	-	2.2	0.6	-	2.8	32.0	6.6	0.6	7.2
4/2	321	321	-	-	-	2.2	0.6	-	2.9	32.1	6.6	0.6	7.2
5/1	123	123	-	-	-	0.3	0.1	-	0.4	12.3	2.9	0.1	3.0
5/2	685	685	-	-	-	1.6	1.5	-	3.1	16.5	5.9	1.5	7.4
6/1	227	227	-	-	-	1.8	0.2	-	2.0	32.3	5.7	0.2	5.9
6/2	449	449	-	-	-	0.2	0.7	-	0.9	6.9	0.4	0.7	1.0
7/1	456	456	-	-	-	1.3	0.4	-	1.7	13.2	6.0	0.4	6.4
7/2	638	638	-	-	-	1.4	0.8	-	2.3	12.8	6.3	0.8	7.1
8/1	198	198	-	-	-	1.0	0.2	-	1.2	22.6	4.8	0.2	5.0
8/2	447	447	-	-	-	1.7	0.9	-	2.6	20.6	5.8	0.9	6.7
9/1	568	568	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	201	201	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	679	679	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	458	458	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	183	183	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	227	227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	776	776	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	314	314	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

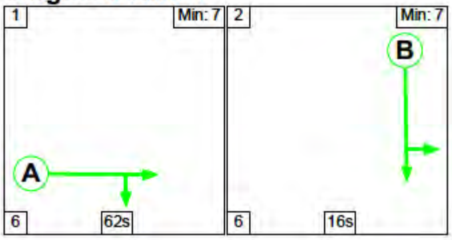
C1	Stream: 1	PRC for Signalled Lanes (%):	43.9	Total Delay for Signalled Lanes (pcuHr):	9.64	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	19.8	Total Delay for Signalled Lanes (pcuHr):	8.90	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	19.3	Total Delay for Signalled Lanes (pcuHr):	11.90	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	56.3	Total Delay for Signalled Lanes (pcuHr):	7.91	Cycle Time (s):	90
		PRC Over All Lanes (%):	19.3	Total Delay Over All Lanes(pcuHr):	38.35		

Full Input Data And Results

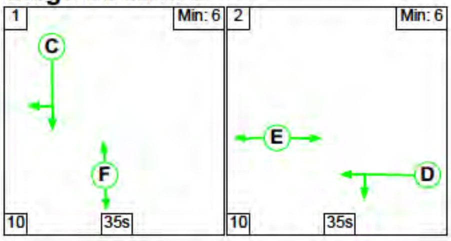
Scenario 3: 'Alternative DS AM' (FG3: 'Alternative DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

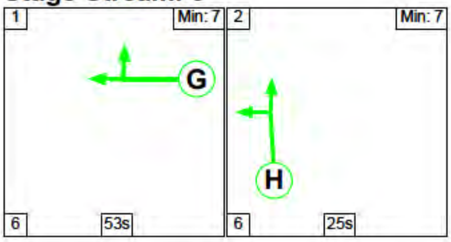
Stage Stream: 1



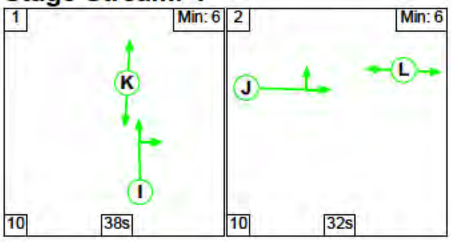
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	62	16
Change Point	0	68

Stage Stream: 2

Stage	1	2
Duration	35	35
Change Point	87	42

Stage Stream: 3

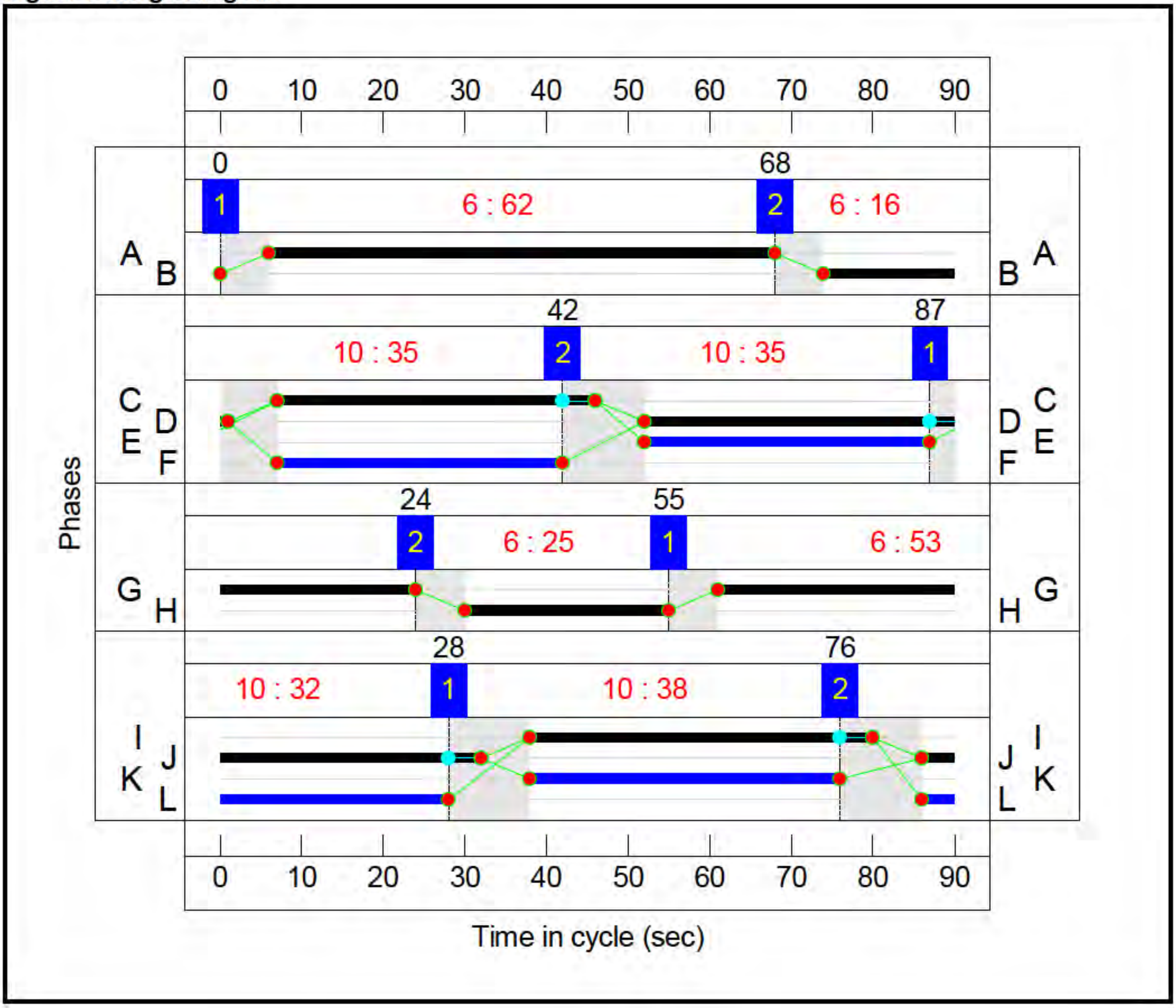
Stage	1	2
Duration	53	25
Change Point	55	24

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	38	32
Change Point	28	76

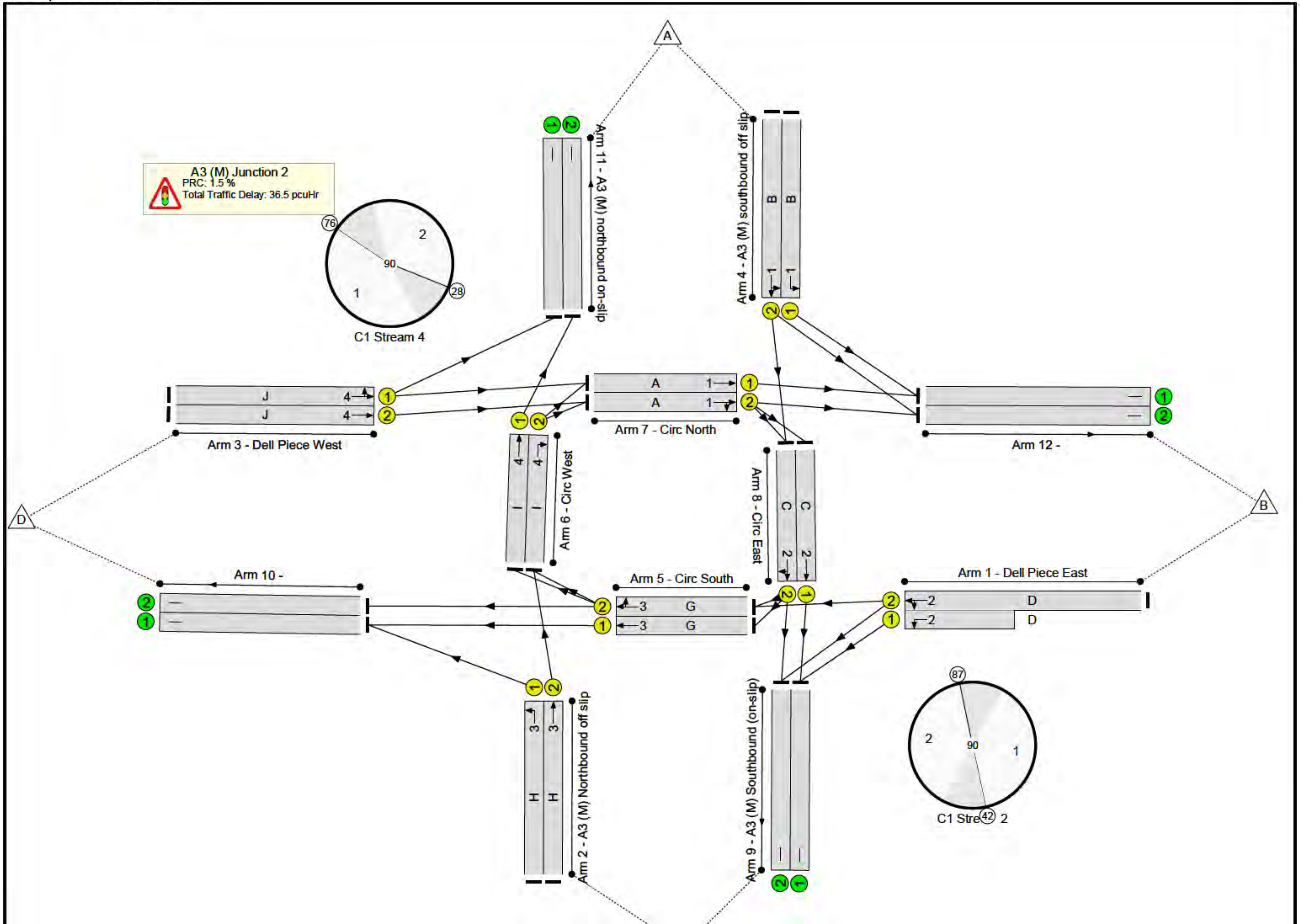
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.6%**
A3 (M) Junction 2	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.6%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	39	-	1016	1900:1900	633+513	88.6 : 88.6%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	25	-	279	1800	520	53.7%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	25	-	197	1800	520	37.9%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	36	-	539	1800	740	72.8%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	36	-	642	1800	740	86.8%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	16	-	143	1800	340	42.1%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	16	-	143	1800	340	42.1%
5/1	Circ South Ahead	U	3	N/A	G		1	53	-	63	1900	1140	5.5%
5/2	Circ South Right Ahead	U	3	N/A	G		1	53	-	624	1900	1140	54.7%
6/1	Circ West Ahead	U	4	N/A	I		1	42	-	352	1800	860	40.9%
6/2	Circ West Right	U	4	N/A	I		1	42	-	197	1800	860	22.9%
7/1	Circ North Ahead	U	1	N/A	A		1	62	-	429	1800	1260	34.0%
7/2	Circ North Right Ahead	U	1	N/A	A		1	62	-	740	1800	1260	58.7%
8/1	Circ East Ahead	U	2	N/A	C		1	39	-	350	1900	844	41.4%
8/2	Circ East Right Ahead	U	2	N/A	C		1	39	-	419	1900	844	49.6%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	805	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	293	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	342	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	272	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	209	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	352	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	572	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	114	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**23.9**	**12.6**	**0.0**	**36.5**	-	-	-	-
A3 (M) Junction 2	-	-	**0**	**0**	**0**	**23.9**	**12.6**	**0.0**	**36.5**	-	-	-	-
1/2+1/1	1016	1016	-	-	-	5.5	3.7	-	9.2	32.6	14.4	3.7	18.1
2/1	279	279	-	-	-	2.1	0.6	-	2.7	34.4	5.8	0.6	6.4
2/2	197	197	-	-	-	1.4	0.3	-	1.7	31.1	3.9	0.3	4.2
3/1	539	539	-	-	-	3.3	1.3	-	4.7	31.1	11.2	1.3	12.6
3/2	642	642	-	-	-	4.3	3.1	-	7.4	41.5	14.6	3.1	17.7
4/1	143	143	-	-	-	1.3	0.4	-	1.6	41.3	3.1	0.4	3.5
4/2	143	143	-	-	-	1.3	0.4	-	1.6	41.3	3.1	0.4	3.5
5/1	63	63	-	-	-	0.1	0.0	-	0.1	8.2	0.3	0.0	0.3
5/2	624	624	-	-	-	0.1	0.6	-	0.7	4.2	0.7	0.6	1.3
6/1	352	352	-	-	-	2.8	0.3	-	3.2	32.4	6.3	0.3	6.6
6/2	197	197	-	-	-	0.0	0.1	-	0.1	2.7	0.0	0.1	0.1
7/1	429	429	-	-	-	0.1	0.3	-	0.3	2.8	0.7	0.3	0.9
7/2	740	740	-	-	-	0.1	0.7	-	0.8	3.9	2.5	0.7	3.2
8/1	350	350	-	-	-	0.5	0.4	-	0.9	9.2	1.0	0.4	1.4
8/2	419	419	-	-	-	0.9	0.5	-	1.4	11.9	4.0	0.5	4.5
9/1	805	805	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	293	293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	342	342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	272	272	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	209	209	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	352	352	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	572	572	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	114	114	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

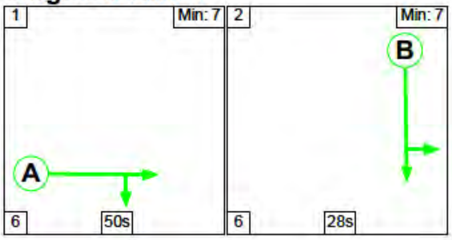
C1	Stream: 1	PRC for Signalled Lanes (%):	53.2	Total Delay for Signalled Lanes (pcuHr):	4.40	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	1.5	Total Delay for Signalled Lanes (pcuHr):	11.48	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	64.4	Total Delay for Signalled Lanes (pcuHr):	5.23	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	3.7	Total Delay for Signalled Lanes (pcuHr):	15.39	Cycle Time (s):	90
		PRC Over All Lanes (%):	1.5	Total Delay Over All Lanes(pcuHr):	36.50		

Full Input Data And Results

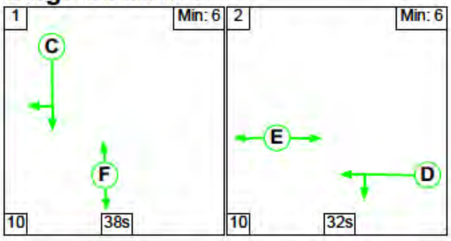
Scenario 4: 'Alternative DS PM' (FG4: 'Alternative DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

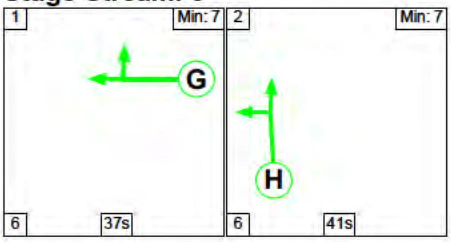
Stage Stream: 1



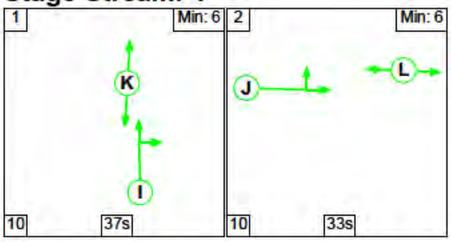
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	50	28
Change Point	0	56

Stage Stream: 2

Stage	1	2
Duration	38	32
Change Point	36	84

Stage Stream: 3

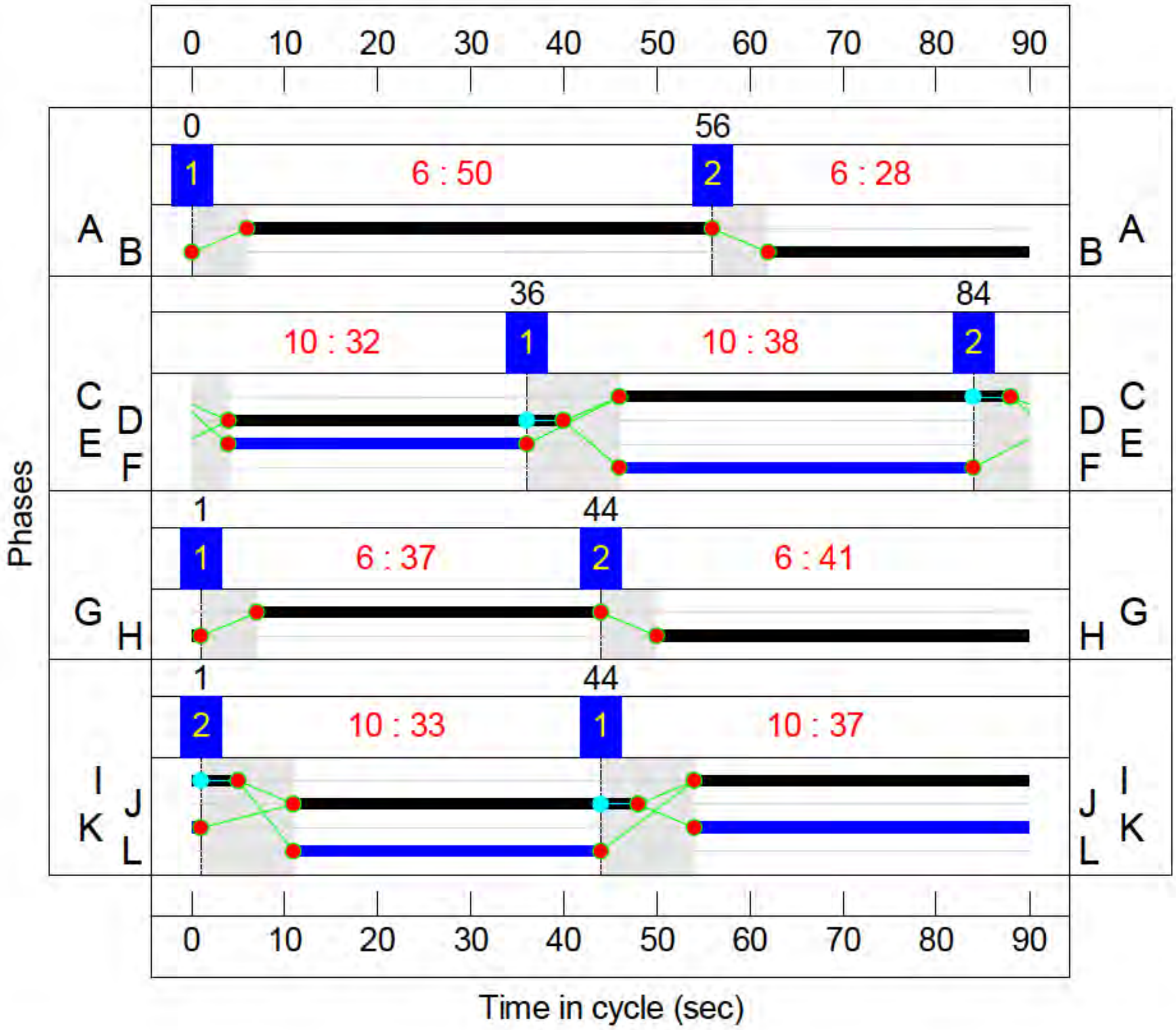
Stage	1	2
Duration	37	41
Change Point	1	44

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	37	33
Change Point	44	1

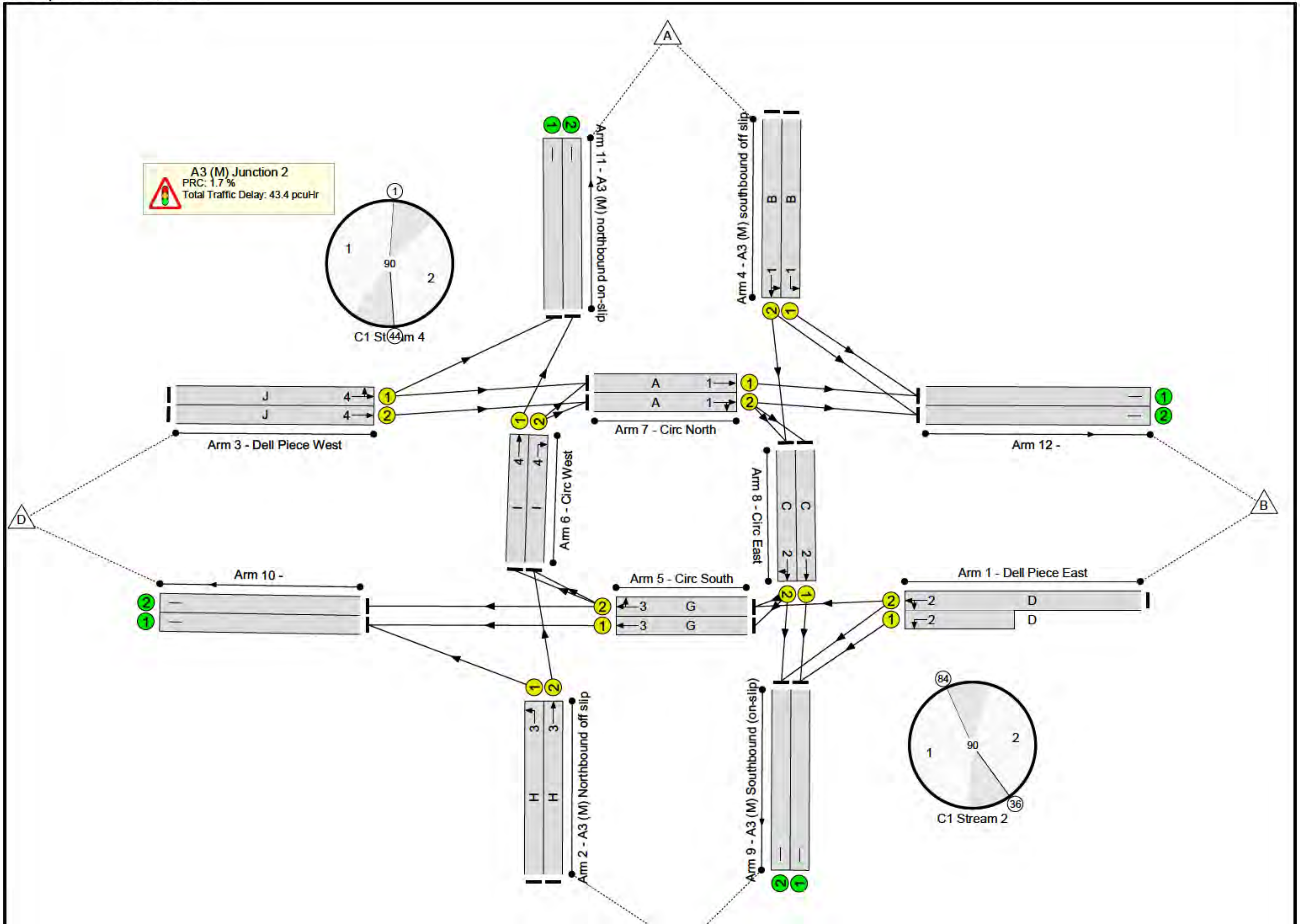
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	**88.5%**
A3 (M) Junction 2	-	-	N/A	-	-		-	-	-	-	-	-	**88.5%**
1/2+1/1	Dell Piece East Ahead Left	U	2	N/A	D		1	36	-	914	1900:1900	618+418	88.2 : 88.2%
2/1	A3 (M) Northbound off slip Left	U	3	N/A	H		1	41	-	743	1800	840	88.5%
2/2	A3 (M) Northbound off slip Ahead	U	3	N/A	H		1	41	-	418	1800	840	49.8%
3/1	Dell Piece West Ahead Left	U	4	N/A	J		1	37	-	449	1800	760	59.1%
3/2	Dell Piece West Ahead	U	4	N/A	J		1	37	-	450	1800	760	59.2%
4/1	A3 (M) southbound off slip Left	U	1	N/A	B		1	28	-	307	1800	580	52.9%
4/2	A3 (M) southbound off slip Ahead Left	U	1	N/A	B		1	28	-	307	1800	580	52.9%
5/1	Circ South Ahead	U	3	N/A	G		1	37	-	105	1900	802	13.1%
5/2	Circ South Right Ahead	U	3	N/A	G		1	37	-	651	1900	802	81.1%
6/1	Circ West Ahead	U	4	N/A	I		1	41	-	227	1800	840	27.0%
6/2	Circ West Right	U	4	N/A	I		1	41	-	418	1800	840	49.8%
7/1	Circ North Ahead	U	1	N/A	A		1	50	-	434	1800	1020	42.5%
7/2	Circ North Right Ahead	U	1	N/A	A		1	50	-	659	1800	1020	64.6%
8/1	Circ East Ahead	U	2	N/A	C		1	42	-	211	1900	908	23.2%
8/2	Circ East Right Ahead	U	2	N/A	C		1	42	-	424	1900	908	46.7%

Full Input Data And Results

9/1	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	580	Inf	Inf	0.0%
9/2	A3 (M) Southbound (on-slip)	U	N/A	N/A	-		-	-	-	213	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	848	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	424	Inf	Inf	0.0%
11/1	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
11/2	A3 (M) northbound on-slip	U	N/A	N/A	-		-	-	-	227	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	741	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	331	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**28.5**	**14.9**	**0.0**	**43.4**	**-**	**-**	**-**	**-**
A3 (M) Junction 2	**-**	**-**	**0**	**0**	**0**	**28.5**	**14.9**	**0.0**	**43.4**	**-**	**-**	**-**	**-**
1/2+1/1	914	914	-	-	-	5.4	3.5	-	9.0	35.4	13.9	3.5	17.5
2/1	743	743	-	-	-	4.5	3.6	-	8.1	39.1	16.7	3.6	20.3
2/2	418	418	-	-	-	1.9	0.5	-	2.4	20.9	7.2	0.5	7.7
3/1	449	449	-	-	-	2.5	0.7	-	3.2	25.8	8.6	0.7	9.3
3/2	450	450	-	-	-	2.5	0.7	-	3.2	25.8	8.6	0.7	9.3
4/1	307	307	-	-	-	2.1	0.6	-	2.7	31.5	6.2	0.6	6.8
4/2	307	307	-	-	-	2.1	0.6	-	2.7	31.5	6.2	0.6	6.8
5/1	105	105	-	-	-	0.4	0.1	-	0.5	17.5	2.6	0.1	2.6
5/2	651	651	-	-	-	1.1	2.1	-	3.2	17.7	4.8	2.1	6.9
6/1	227	227	-	-	-	1.5	0.2	-	1.6	26.1	5.7	0.2	5.9
6/2	418	418	-	-	-	0.4	0.5	-	0.9	7.6	0.8	0.5	1.3
7/1	434	434	-	-	-	1.2	0.4	-	1.6	13.2	5.3	0.4	5.7
7/2	659	659	-	-	-	1.3	0.9	-	2.2	12.1	5.5	0.9	6.4
8/1	211	211	-	-	-	0.5	0.2	-	0.6	10.6	4.4	0.2	4.5
8/2	424	424	-	-	-	1.0	0.4	-	1.4	11.8	5.4	0.4	5.8
9/1	580	580	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	213	213	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	848	848	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	424	424	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	227	227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	741	741	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	331	331	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

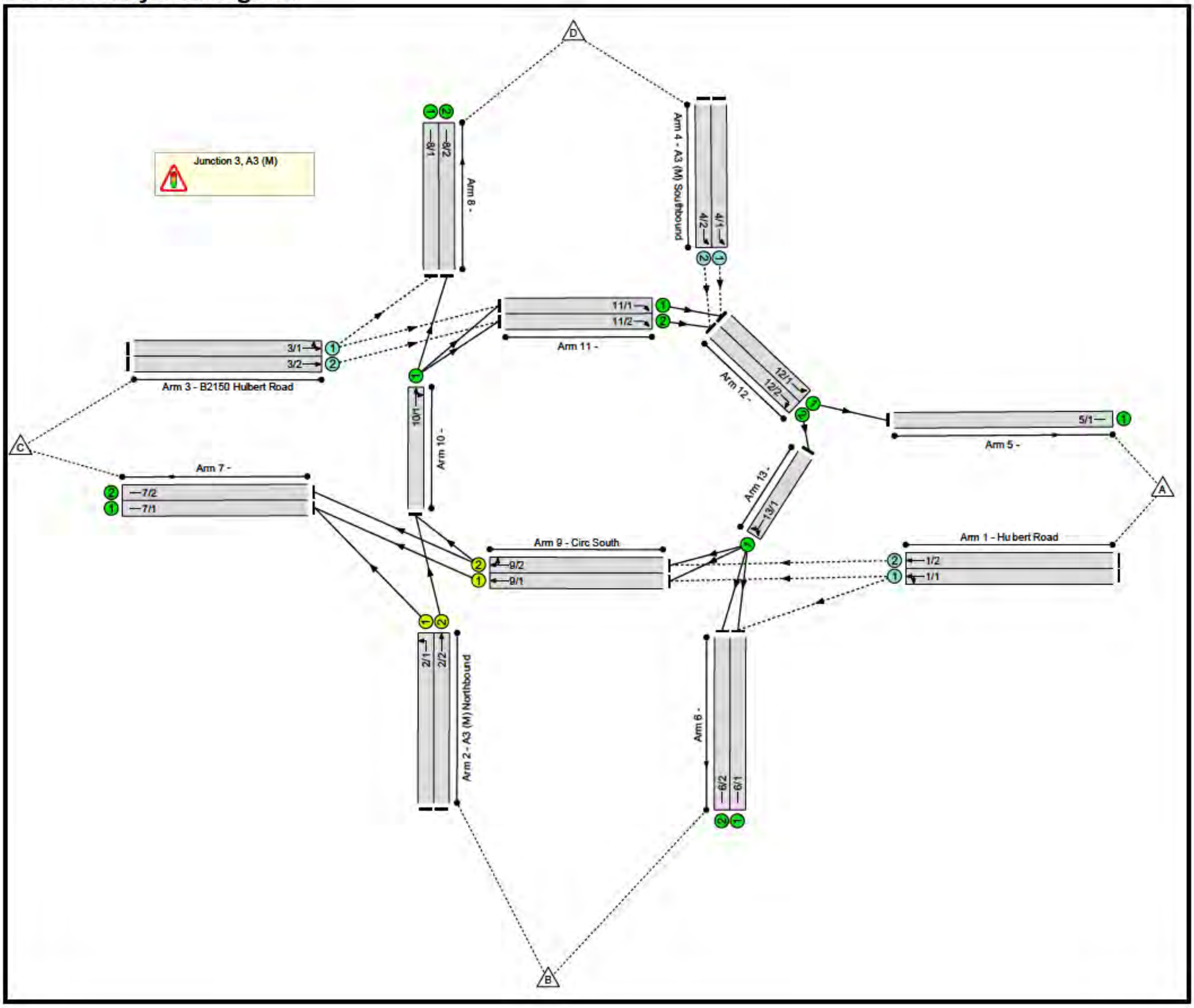
C1	Stream: 1	PRC for Signalled Lanes (%):	39.3	Total Delay for Signalled Lanes (pcuHr):	9.18	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	2.0	Total Delay for Signalled Lanes (pcuHr):	10.99	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	1.7	Total Delay for Signalled Lanes (pcuHr):	14.20	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	52.0	Total Delay for Signalled Lanes (pcuHr):	8.98	Cycle Time (s):	90
		PRC Over All Lanes (%):	1.7	Total Delay Over All Lanes(pcuHr):	43.35		

Full Input Data And Results

User and Project Details

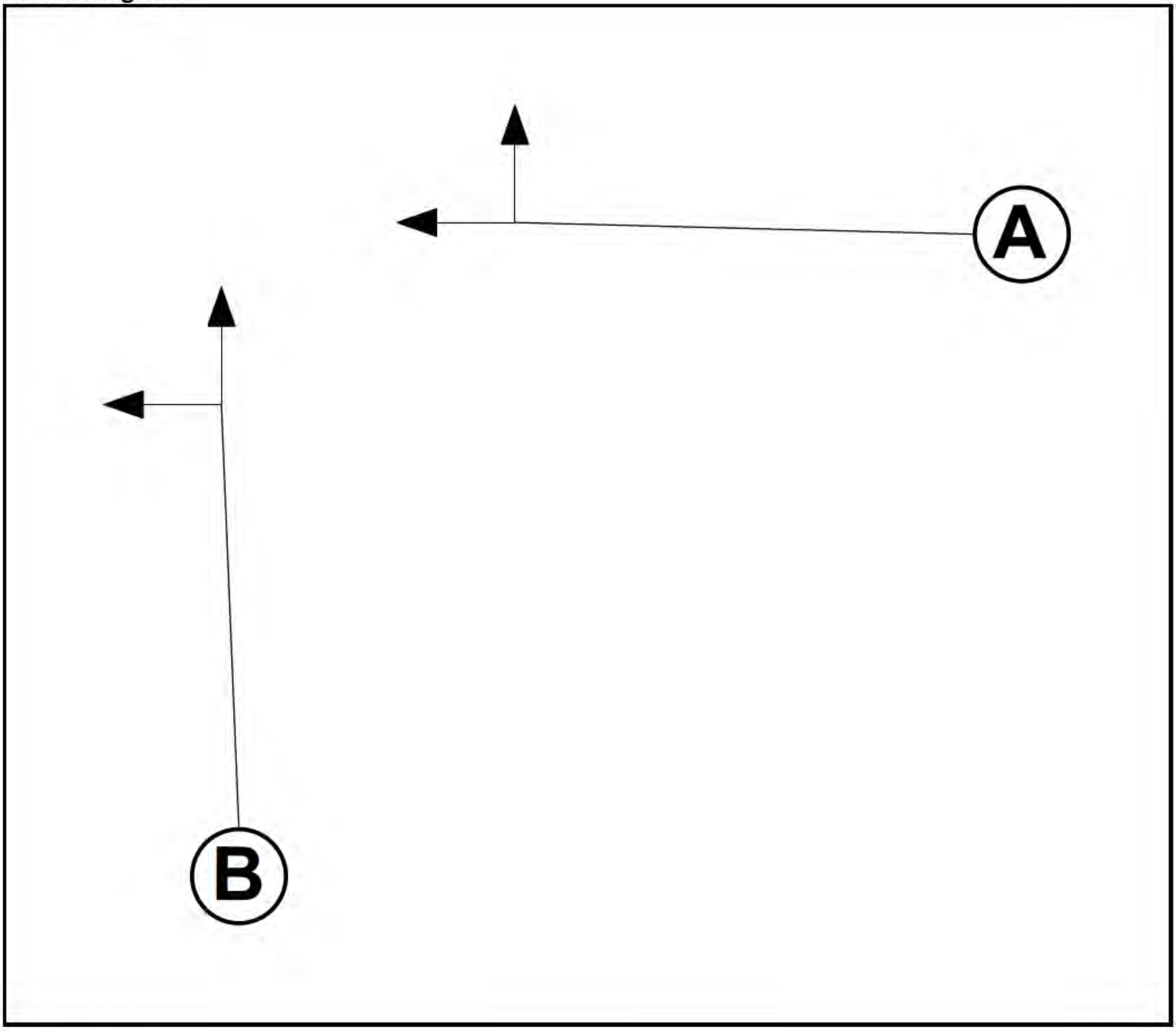
Project:	
Title:	
Location:	
Additional detail:	
File name:	A3 (M) J3 - Prohibited left turn from offside lane of A3 (south) approach.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

Phase Intergreens Matrix

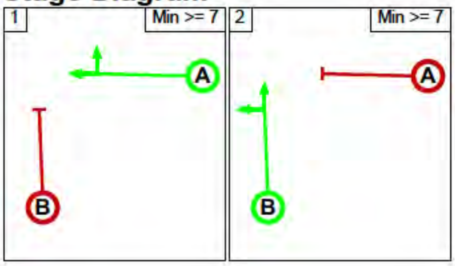
		Starting Phase	
		A	B
Terminating Phase	A		5
	B	5	

Phases in Stage

Stage No.	Phases in Stage
1	A
2	B

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage	
From Stage		1	2
	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

<table>
<tr><th colspan="12">Junction: Junction 3, A3 (M)</th></tr>
<tr><th>Lane</th><th>Movement</th><th>Max Flow when Giving Way (PCU/Hr)</th><th>Min Flow when Giving Way (PCU/Hr)</th><th>Opposing Lane</th><th>Opp. Lane Coeff.</th><th>Opp. Mvmnts.</th><th>Right Turn Storage (PCU)</th><th>Non-Blocking Storage (PCU)</th><th>RTF</th><th>Right Turn Move up (s)</th><th>Max Turns in Intergreen (PCU)</th></tr>
<tr><td rowspan="2">1/1 (Hulbert Road)</td><td>6/1 (Left)</td><td>1000</td><td>0</td><td>13/1</td><td>0.33</td><td>All</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td></tr>
<tr><td>9/1 (Ahead)</td><td>1000</td><td>0</td><td>13/1</td><td>0.33</td><td>All</td></tr>
<tr><td>1/2 (Hulbert Road)</td><td>9/2 (Ahead)</td><td>1000</td><td>0</td><td>13/1</td><td>0.33</td><td>All</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="2">3/1 (B2150 Hulbert Road)</td><td>8/1 (Left)</td><td>1000</td><td>0</td><td>10/1</td><td>0.33</td><td>To 8/2 (Ahead)</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td></tr>
<tr><td>11/1 (Ahead)</td><td>1000</td><td>0</td><td>10/1</td><td>1.09</td><td>To 8/2 (Ahead) To 11/1 (Right)</td></tr>
<tr><td>3/2 (B2150 Hulbert Road)</td><td>11/2 (Ahead)</td><td>1000</td><td>0</td><td>10/1</td><td>0.33</td><td>All</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>4/1 (A3 (M) Southbound)</td><td>12/1 (Left)</td><td>1000</td><td>0</td><td>11/1</td><td>0.33</td><td>All</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="2">4/2 (A3 (M) Southbound)</td><td rowspan="2">12/2 (Left)</td><td rowspan="2">1000</td><td rowspan="2">0</td><td>11/2</td><td>0.33</td><td>All</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td></tr>
<tr><td>11/1</td><td>0.33</td><td>All</td></tr>
</table>

Full Input Data And Results

Lane Input Data

Junction: Junction 3, A3 (M)												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 6 Left	Inf
											Arm 9 Ahead	Inf
1/2 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	N	Arm 9 Ahead	Inf
2/1 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.83	0.00	Y	Arm 7 Left	5431.00
2/2 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.61	0.00	N	Arm 10 Ahead	126.00
3/1 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.81	0.00	Y	Arm 8 Left	645.00
											Arm 11 Ahead	Inf
3/2 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.90	0.00	N	Arm 11 Ahead	122.00
4/1 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.48	0.00	Y	Arm 12 Left	122.00
4/2 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.58	0.00	N	Arm 12 Left	164.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Circ South)	U	A	2	3	20.9	Geom	-	4.04	0.00	Y	Arm 7 Ahead	111.00
9/2 (Circ South)	U	A	2	3	20.9	Geom	-	4.00	0.00	N	Arm 7 Ahead	127.00
											Arm 10 Right	70.00
10/1	U		2	3	19.1	Inf	-	-	-	-	-	-
11/1	U		2	3	27.0	Inf	-	-	-	-	-	-
11/2	U		2	3	27.0	Inf	-	-	-	-	-	-
12/1	U		2	3	15.7	Inf	-	-	-	-	-	-
12/2	U		2	3	15.7	Inf	-	-	-	-	-	-
13/1	U		2	3	7.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Alternative DM AM'	08:00	09:00	01:00	
2: 'Alternative DM PM'	17:00	18:00	01:00	
3: 'Alternative DS AM'	08:00	09:00	01:00	
4: 'Alternative DS PM'	17:00	18:00	01:00	

Scenario 1: 'Alternative DM AM' (FG1: 'Alternative DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	459	195	669
	B	40	3	917	2	962
	C	325	1410	6	387	2128
	D	212	3	309	0	524
	Tot.	577	1431	1691	584	4283

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: Alternative DM AM
Junction: Junction 3, A3 (M)	
1/1	329
1/2	340
2/1	917
2/2	42
3/1	712
3/2	1410
4/1	212
4/2	312
5/1	577
6/1	722
6/2	706
7/1	1381
7/2	304
8/1	387
8/2	197
9/1	464
9/2	499
10/1	237
11/1	365
11/2	1410
12/1	577
12/2	1722
13/1	1722

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	4.6 %	1990	1990
				Arm 9 Ahead	Inf	95.4 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	54.4 %	1993	1993
				Arm 11 Ahead	Inf	45.6 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	60.9 %	2122	2122
				Arm 10 Right	70.00	39.1 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: 'Alternative DM PM' (FG2: 'Alternative DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	45	487	163	695
	B	18	0	1183	0	1201
	C	291	736	26	263	1316
	D	326	0	524	0	850
	Tot.	635	781	2220	426	4062

Traffic Lane Flows

Lane	Scenario 2: Alternative DM PM
Junction: Junction 3, A3 (M)	
1/1	322
1/2	373
2/1	1183
2/2	18
3/1	554
3/2	736
4/1	326
4/2	524
5/1	635
6/1	413
6/2	368
7/1	1750
7/2	444
8/1	263
8/2	163
9/1	567
9/2	607
10/1	181
11/1	309
11/2	736
12/1	635
12/2	1260
13/1	1260

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	14.0 %	1990	1990
				Arm 9 Ahead	Inf	86.0 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	47.5 %	1994	1994
				Arm 11 Ahead	Inf	52.5 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	73.1 %	2124	2124
				Arm 10 Right	70.00	26.9 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: 'Alternative DS AM' (FG3: 'Alternative DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	491	205	711
	B	40	3	1011	2	1056
	C	322	1370	6	416	2114
	D	219	3	280	0	502
	Tot.	581	1391	1788	623	4383

Traffic Lane Flows

Lane	Scenario 3: Alternative DS AM
Junction: Junction 3, A3 (M)	
1/1	348
1/2	363
2/1	1011
2/2	42
3/1	738
3/2	1370
4/1	219
4/2	283
5/1	581
6/1	702
6/2	686
7/1	1482
7/2	300
8/1	416
8/2	207
9/1	471
9/2	505
10/1	247
11/1	362
11/2	1370
12/1	581
12/2	1653
13/1	1653

Full Input Data And Results

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	4.3 %	1990	1990
				Arm 9 Ahead	Inf	95.7 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	56.4 %	1993	1993
				Arm 11 Ahead	Inf	43.6 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	59.4 %	2122	2122
				Arm 10 Right	70.00	40.6 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 4: 'Alternative DS PM' (FG4: 'Alternative DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	45	476	233	754
	B	18	0	1272	0	1290
	C	296	736	26	87	1145
	D	333	0	501	0	834
	Tot.	647	781	2275	320	4023

Traffic Lane Flows

Lane	Scenario 4: Alternative DS PM
Junction: Junction 3, A3 (M)	
1/1	337
1/2	417
2/1	1272
2/2	18
3/1	383
3/2	736
4/1	333
4/2	501
5/1	647
6/1	413
6/2	368
7/1	1858
7/2	391
8/1	87
8/2	233
9/1	586
9/2	624
10/1	251
11/1	314
11/2	736
12/1	647
12/2	1237
13/1	1237

Full Input Data And Results

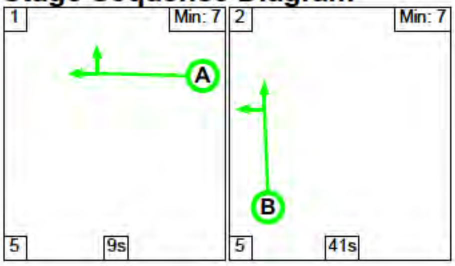
Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	13.4 %	1990	1990
				Arm 9 Ahead	Inf	86.6 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 10 Ahead	126.00	100.0 %	2091	2091
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	22.7 %	1995	1995
				Arm 11 Ahead	Inf	77.3 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	62.7 %	2122	2122
				Arm 10 Right	70.00	37.3 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 1: 'Alternative DM AM' (FG1: 'Alternative DM AM', Plan 1: 'Network Control Plan 1')

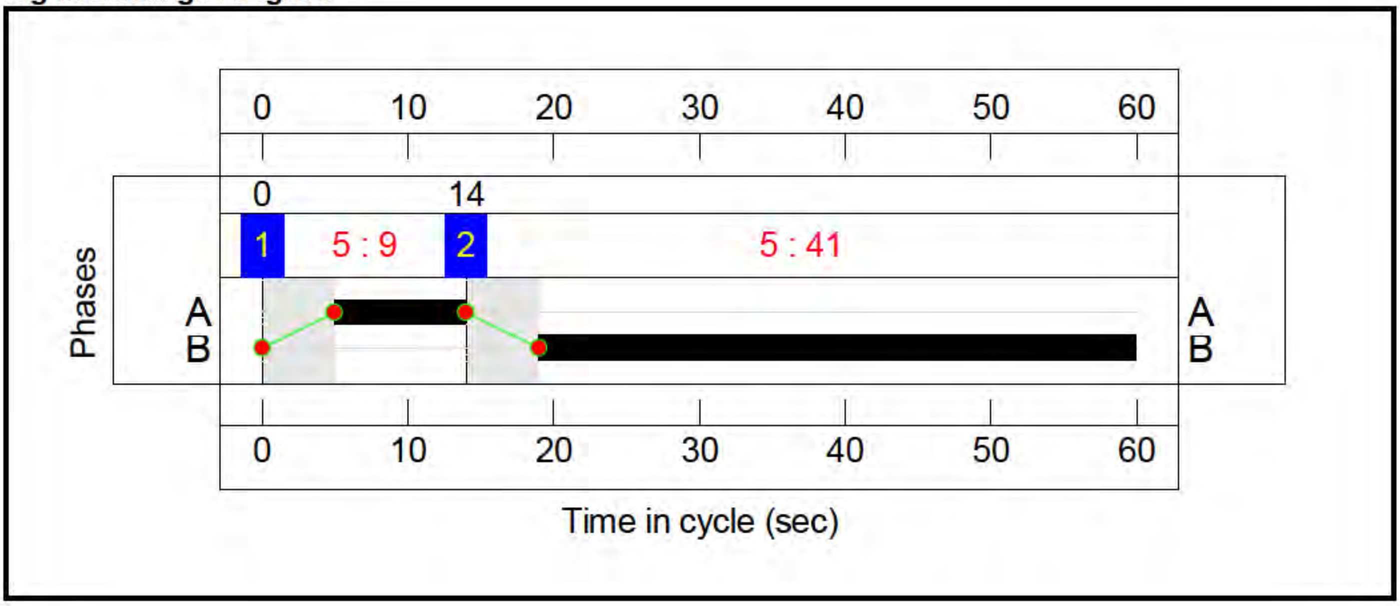
Stage Sequence Diagram



Stage Timings

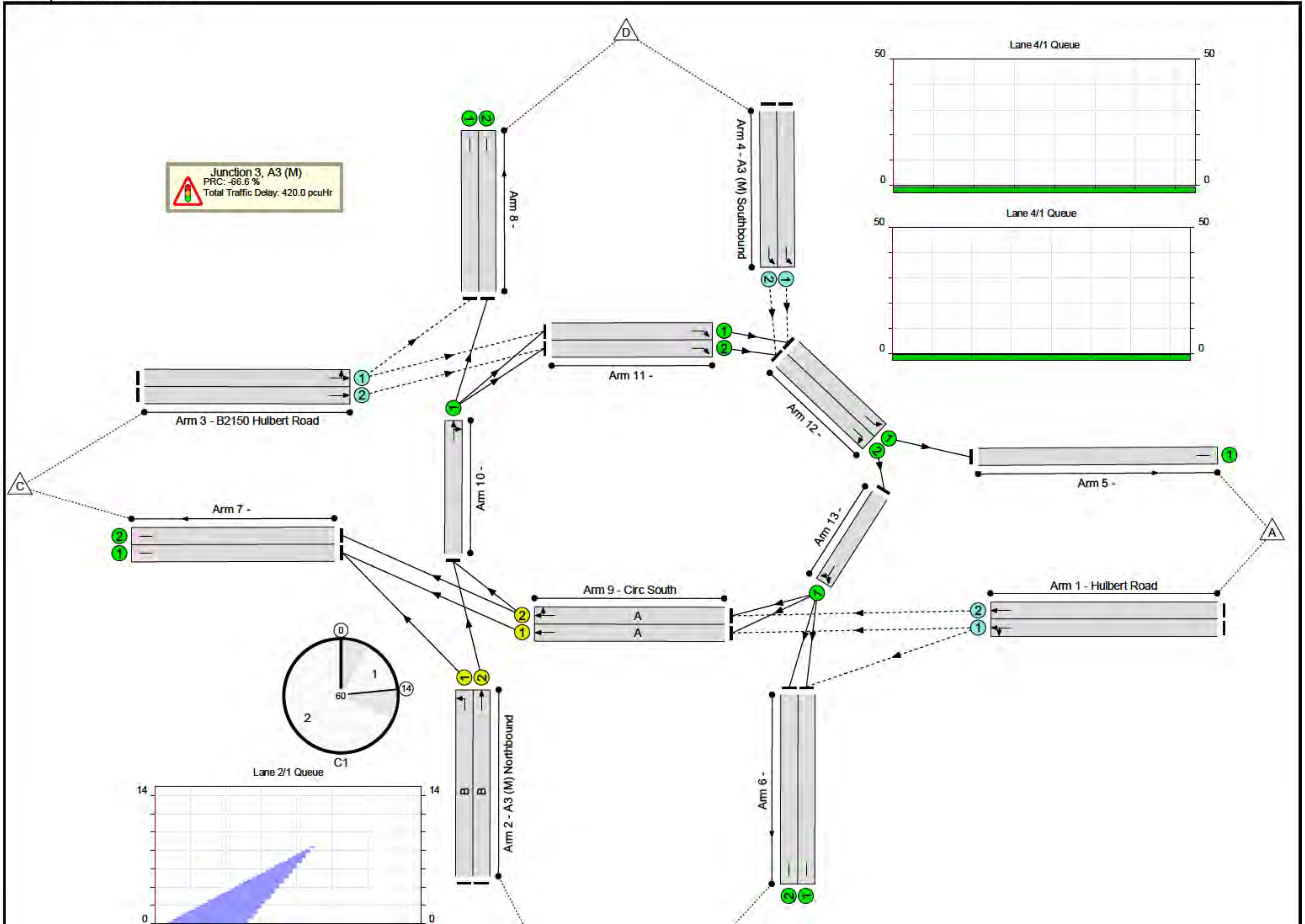
Stage	1	2
Duration	9	41
Change Point	0	14

Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	150.0%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	150.0%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	329	1990	586	56.1%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	340	2130	586	58.0%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	41	-	917	1997	1398	65.6%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	41	-	42	2091	1464	2.9%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	712	1993	860	82.8%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	1410	2119	940	150.0%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	212	1939	879	24.1%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	312	2094	569	54.8%
5/1		U	N/A	N/A	-		-	-	-	577	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	722	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	706	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1381	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	387	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	9	-	464	1992	332	139.8%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	9	-	499	2122	354	141.1%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	237	Inf	Inf	0.0%

Full Input Data And Results

11/1	Ahead	U	N/A	N/A	-		-	-	-	365	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	1410	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	577	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1722	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1722	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**2845**	**0**	**0**	**36.2**	**383.8**	**0.0**	**420.0**	-	-	-	-
Junction 3, A3 (M)	-	-	**2845**	**0**	**0**	**36.2**	**383.8**	**0.0**	**420.0**	-	-	-	-
1/1	329	329	329	0	0	0.0	0.6	-	0.6	7.0	0.0	0.6	0.6
1/2	340	340	340	0	0	0.0	0.7	-	0.7	7.3	0.0	0.7	0.7
2/1	917	917	-	-	-	1.3	0.9	-	2.2	8.7	8.4	0.9	9.4
2/2	42	42	-	-	-	0.0	0.0	-	0.0	4.1	0.2	0.0	0.2
3/1	712	712	712	0	0	0.2	2.3	-	2.5	12.7	5.1	2.3	7.5
3/2	1410	940	940	0	0	19.7	236.4	-	256.1	653.8	70.5	236.4	306.9
4/1	212	212	212	0	0	0.0	0.2	-	0.2	2.7	0.0	0.2	0.2
4/2	312	312	312	0	0	0.0	0.6	-	0.6	7.0	0.0	0.6	0.6
5/1	577	577	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	487	487	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	471	471	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1249	1249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	215	215	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	387	387	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	140	140	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	464	332	-	-	-	7.2	67.7	-	74.9	581.2	9.9	67.7	77.7
9/2	499	354	-	-	-	7.8	74.3	-	82.2	593.0	10.8	74.3	85.1
10/1	180	180	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	365	365	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	940	940	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	577	577	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1252	1252	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1252	1252	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

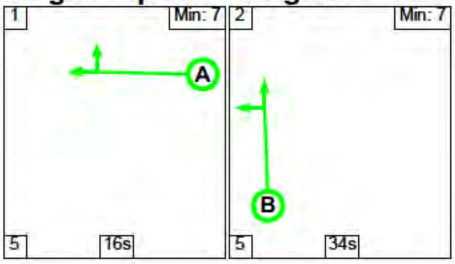
C1 PRC for Signalled Lanes (%): -56.8 Total Delay for Signalled Lanes (pcuHr): 159.37 Cycle Time (s): 60
PRC Over All Lanes (%): -66.6 Total Delay Over All Lanes(pcuHr): 420.04

Full Input Data And Results

Full Input Data And Results

Scenario 2: 'Alternative DM PM' (FG2: 'Alternative DM PM', Plan 1: 'Network Control Plan 1')

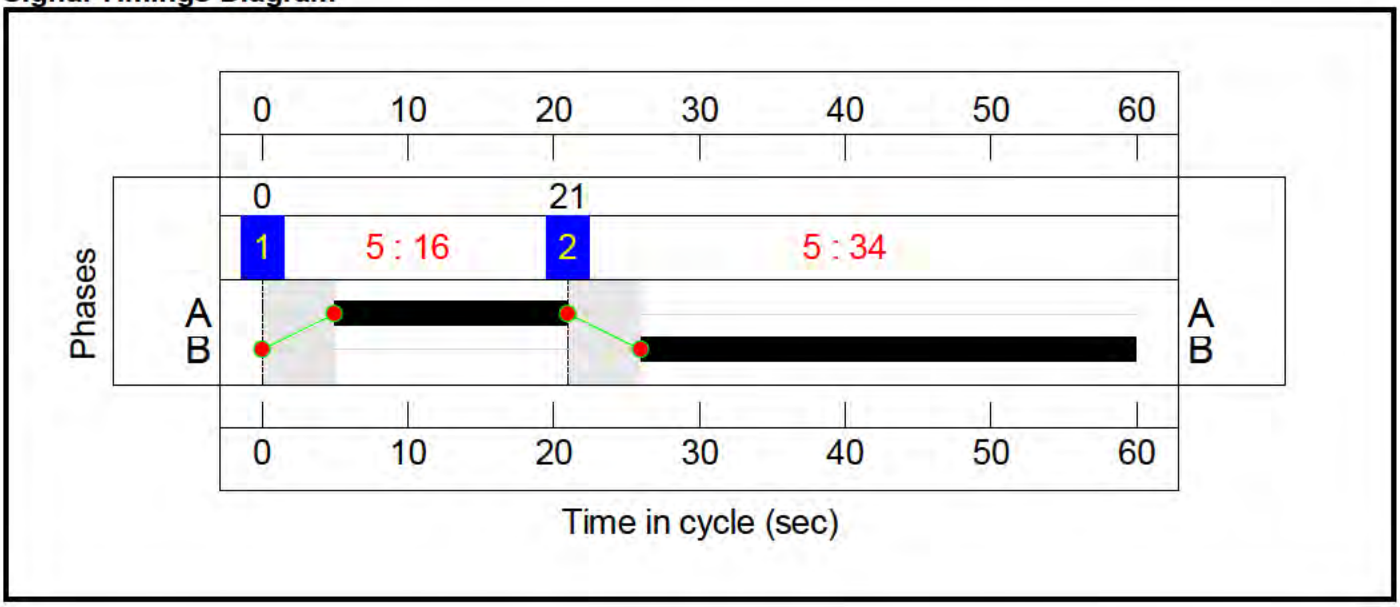
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	16	34
Change Point	0	21

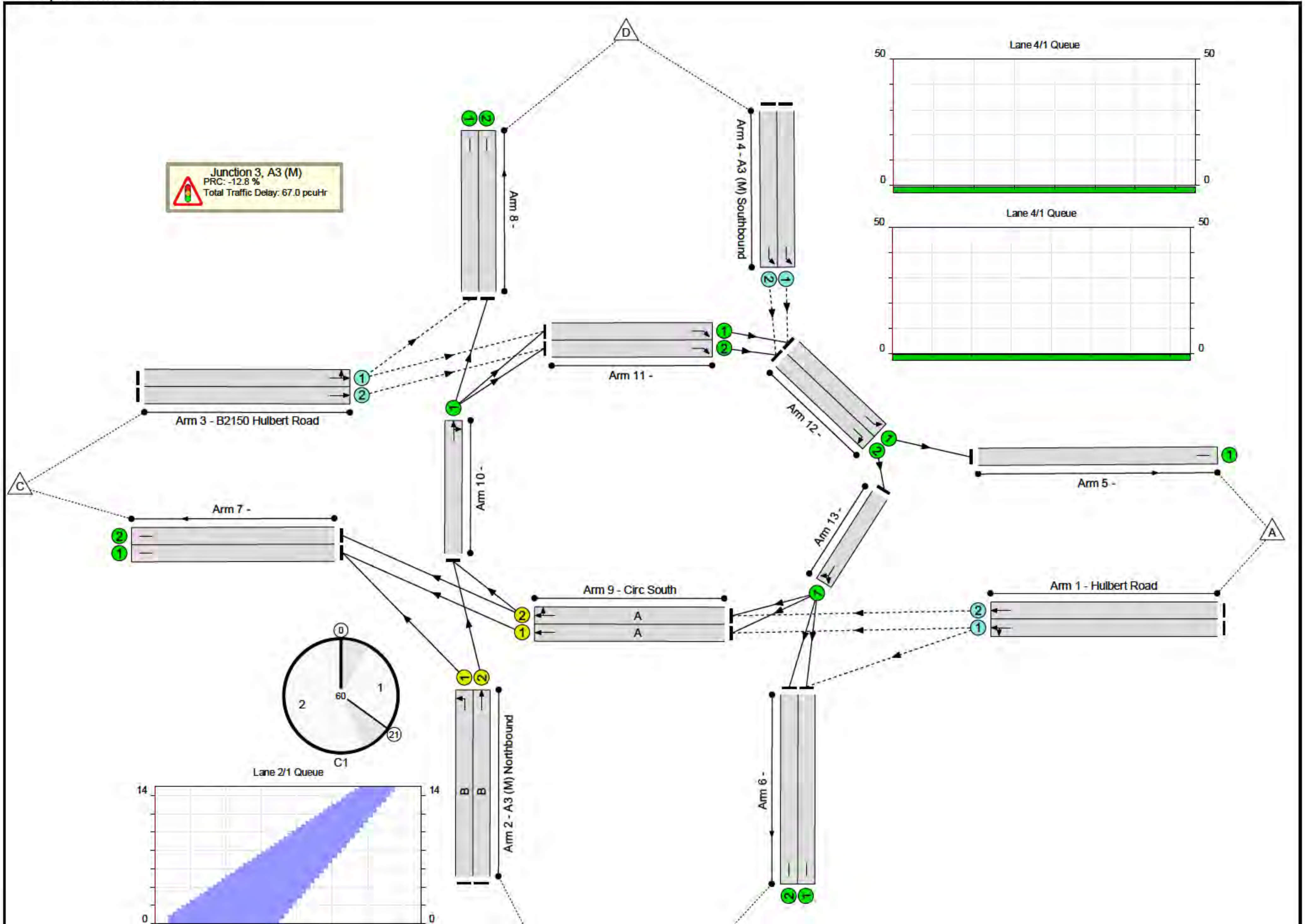
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	101.6%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	101.6%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	322	1990	584	55.1%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	373	2130	584	63.9%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	34	-	1183	1997	1165	101.6%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	34	-	18	2091	1220	1.5%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	554	1994	854	64.8%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	736	2119	940	78.3%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	326	1939	898	36.3%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	524	2094	655	80.0%
5/1		U	N/A	N/A	-		-	-	-	635	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	413	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	368	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1750	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	444	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	263	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	16	-	567	1992	564	100.5%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	16	-	607	2124	602	100.9%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	181	Inf	Inf	0.0%

Full Input Data And Results

11/1	Ahead	U	N/A	N/A	-		-	-	-	309	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	635	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1260	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1260	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**2835**	**0**	**0**	**12.1**	**55.0**	**0.0**	**67.0**	-	-	-	-
Junction 3, A3 (M)	-	-	**2835**	**0**	**0**	**12.1**	**55.0**	**0.0**	**67.0**	-	-	-	-
1/1	322	322	322	0	0	0.0	0.6	-	0.6	6.8	0.0	0.6	0.6
1/2	373	373	373	0	0	0.0	0.9	-	0.9	8.5	0.0	0.9	0.9
2/1	1183	1165	-	-	-	4.8	22.3	-	27.1	82.4	20.0	22.3	42.3
2/2	18	18	-	-	-	0.0	0.0	-	0.0	6.9	0.1	0.0	0.1
3/1	554	554	554	0	0	0.0	0.9	-	0.9	6.0	1.5	0.9	2.5
3/2	736	736	736	0	0	0.0	1.8	-	1.8	8.7	0.0	1.8	1.8
4/1	326	326	326	0	0	0.0	0.3	-	0.3	3.1	0.0	0.3	0.3
4/2	524	524	524	0	0	0.0	1.9	-	1.9	13.4	0.0	1.9	1.9
5/1	635	635	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1729	1729	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	440	440	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	263	263	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	162	162	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	567	564	-	-	-	3.5	12.6	-	16.0	101.8	9.5	12.6	22.1
9/2	607	602	-	-	-	3.8	13.7	-	17.5	103.6	10.2	13.7	23.9
10/1	180	180	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	309	309	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	635	635	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1260	1260	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1260	1260	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

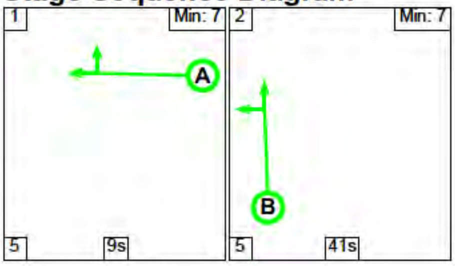
C1 PRC for Signalled Lanes (%): -12.8 Total Delay for Signalled Lanes (pcuHr): 60.62 Cycle Time (s): 60
PRC Over All Lanes (%): -12.8 Total Delay Over All Lanes(pcuHr): 67.03

Full Input Data And Results

Full Input Data And Results

Scenario 3: 'Alternative DS AM' (FG3: 'Alternative DS AM', Plan 1: 'Network Control Plan 1')

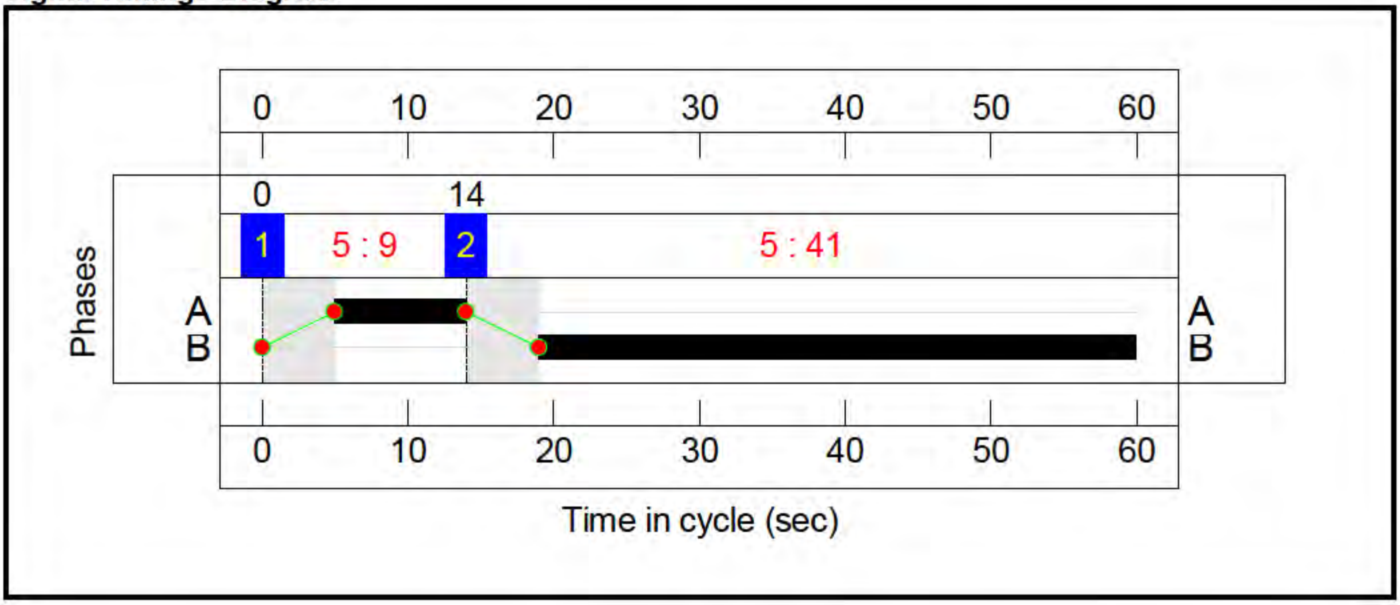
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	9	41
Change Point	0	14

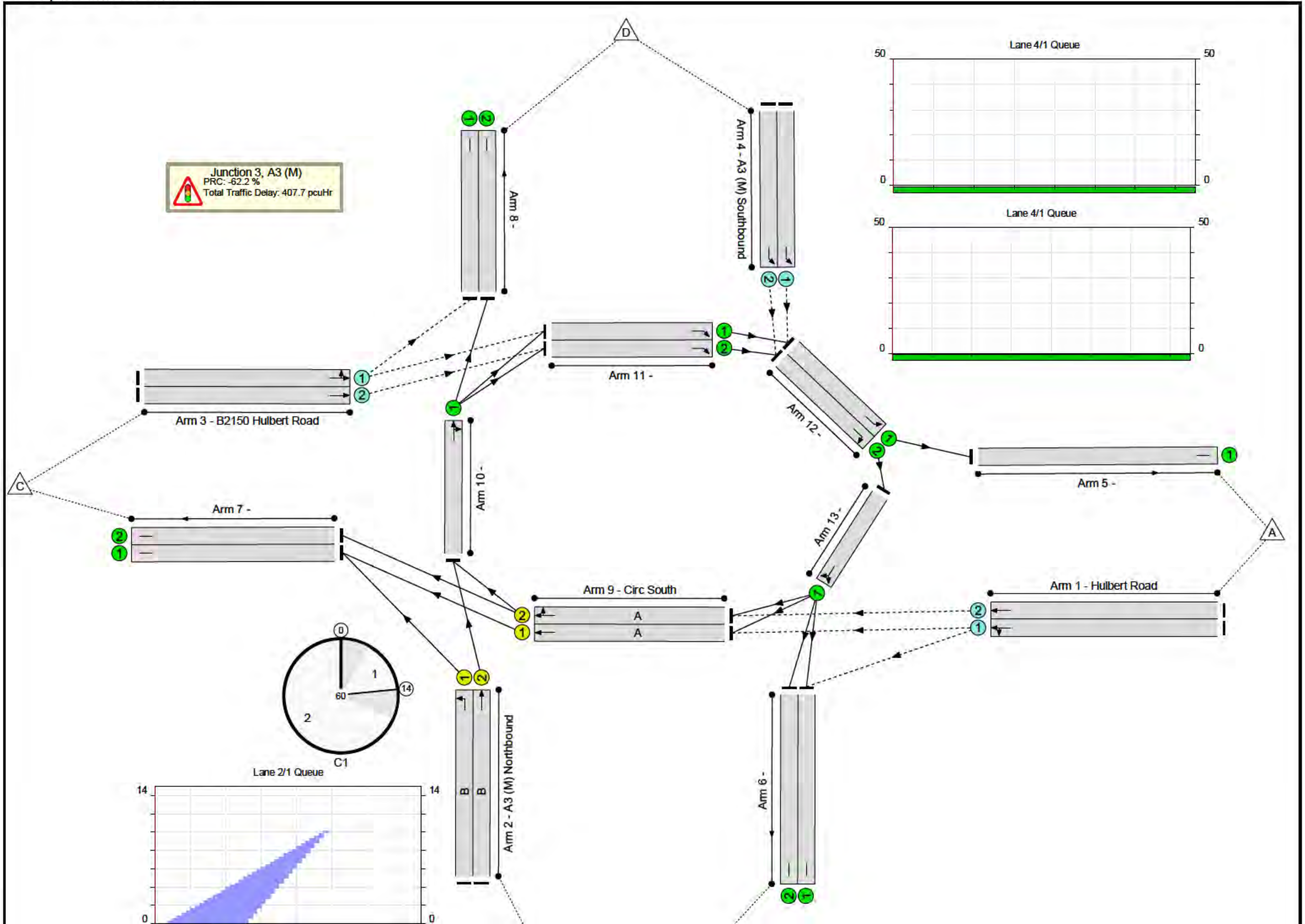
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	146.0%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	146.0%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	348	1990	597	58.3%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	363	2130	597	60.8%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	41	-	1011	1997	1398	72.3%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	41	-	42	2091	1464	2.9%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	738	1993	856	86.2%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	1370	2119	938	146.0%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	219	1939	880	24.9%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	283	2094	571	49.6%
5/1		U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	686	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1482	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	300	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	416	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	207	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	9	-	471	1992	332	141.9%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	9	-	505	2122	354	142.8%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	247	Inf	Inf	0.0%

Full Input Data And Results

11/1	Ahead	U	N/A	N/A	-		-	-	-	362	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	1370	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1653	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1653	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2889**	**0**	**0**	**35.5**	**372.2**	**0.0**	**407.7**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**2889**	**0**	**0**	**35.5**	**372.2**	**0.0**	**407.7**	**-**	**-**	**-**	**-**
1/1	348	348	348	0	0	0.0	0.7	-	0.7	7.2	0.0	0.7	0.7
1/2	363	363	363	0	0	0.0	0.8	-	0.8	7.7	0.0	0.8	0.8
2/1	1011	1011	-	-	-	1.5	1.3	-	2.8	10.1	10.1	1.3	11.4
2/2	42	42	-	-	-	0.0	0.0	-	0.0	4.1	0.2	0.0	0.2
3/1	738	738	738	0	0	0.3	3.0	-	3.2	15.8	6.2	3.0	9.1
3/2	1370	938	938	0	0	18.1	217.3	-	235.4	618.7	68.5	217.3	285.8
4/1	219	219	219	0	0	0.0	0.2	-	0.2	2.7	0.0	0.2	0.2
4/2	283	283	283	0	0	0.0	0.5	-	0.5	6.2	0.0	0.5	0.5
5/1	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	486	486	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1343	1343	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	210	210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	416	416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	146	146	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	471	332	-	-	-	7.5	71.2	-	78.6	600.9	10.3	71.2	81.4
9/2	505	354	-	-	-	8.1	77.3	-	85.4	608.6	11.1	77.3	88.4
10/1	186	186	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	362	362	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	938	938	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1221	1221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1221	1221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

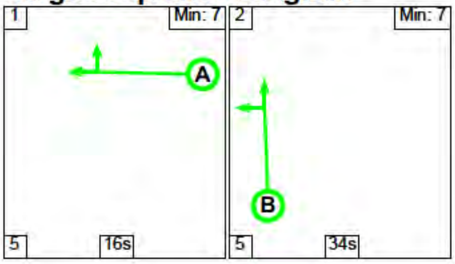
C1 PRC for Signalled Lanes (%): -58.7 Total Delay for Signalled Lanes (pcuHr): 166.87 Cycle Time (s): 60
PRC Over All Lanes (%): -62.2 Total Delay Over All Lanes(pcuHr): 407.66

Full Input Data And Results

Full Input Data And Results

Scenario 4: 'Alternative DS PM' (FG4: 'Alternative DS PM', Plan 1: 'Network Control Plan 1')

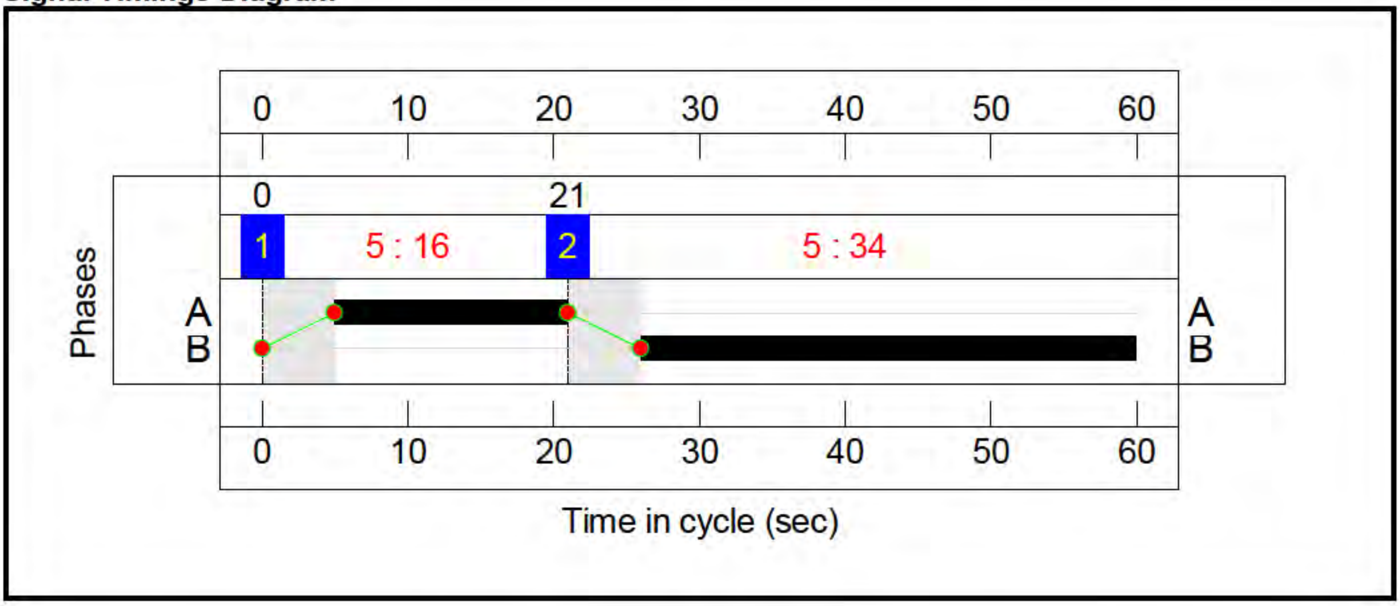
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	16	34
Change Point	0	21

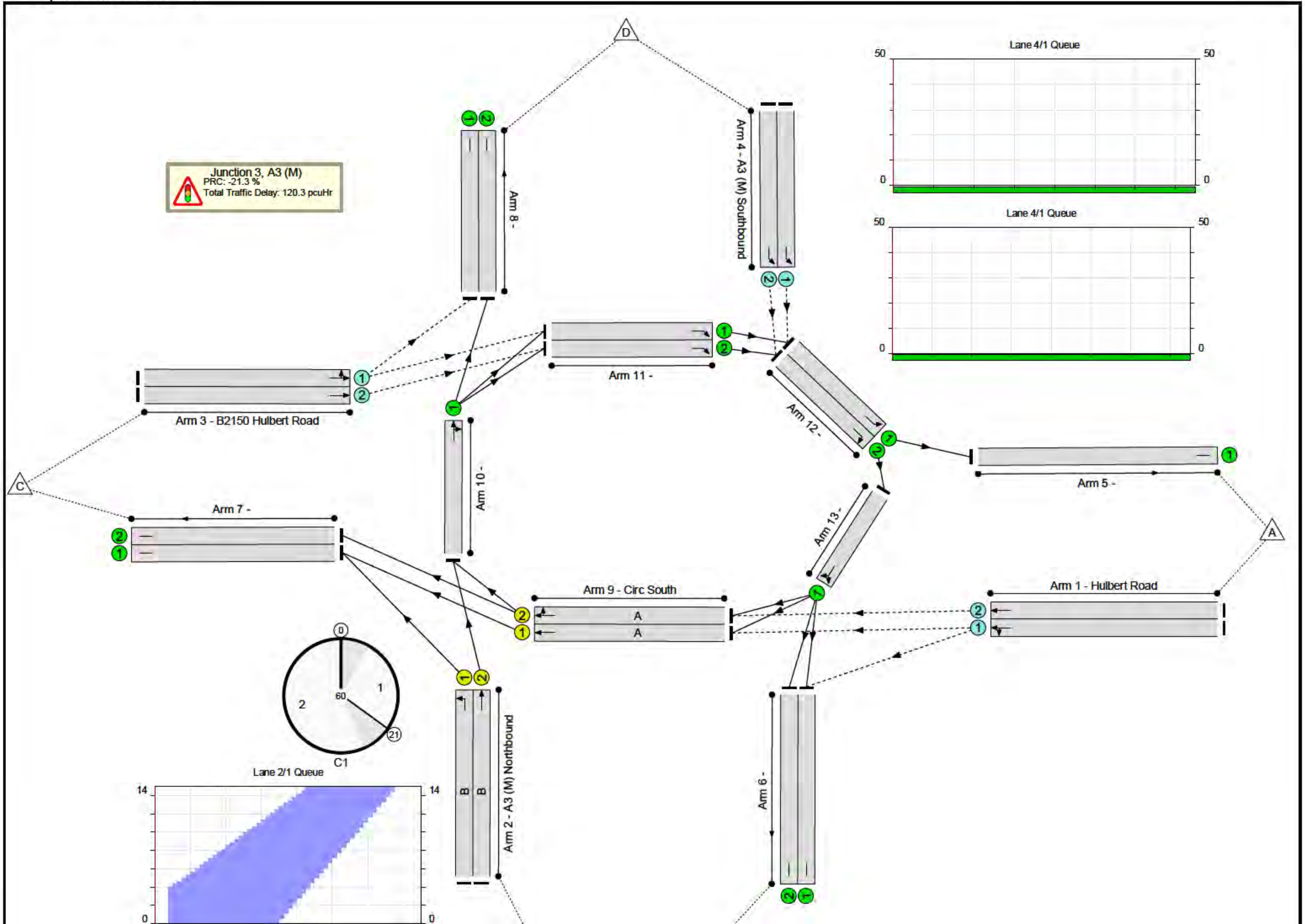
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	109.2%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	109.2%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	337	1990	592	57.0%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	417	2130	592	70.5%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	34	-	1272	1997	1165	109.2%
2/2	A3 (M) Northbound Ahead	U	N/A	N/A	B		1	34	-	18	2091	1220	1.5%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	383	1995	755	50.7%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	736	2119	920	80.0%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	333	1939	896	37.2%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	501	2094	653	76.7%
5/1		U	N/A	N/A	-		-	-	-	647	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	413	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	368	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1858	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	391	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	87	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	16	-	586	1992	564	103.8%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	16	-	624	2122	601	103.8%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	251	Inf	Inf	0.0%

Full Input Data And Results

11/1	Ahead	U	N/A	N/A	-		-	-	-	314	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	647	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**2707**	**0**	**0**	**17.1**	**103.2**	**0.0**	**120.3**	-	-	-	-
Junction 3, A3 (M)	-	-	**2707**	**0**	**0**	**17.1**	**103.2**	**0.0**	**120.3**	-	-	-	-
1/1	337	337	337	0	0	0.0	0.7	-	0.7	7.0	0.0	0.7	0.7
1/2	417	417	417	0	0	0.0	1.2	-	1.2	10.2	0.0	1.2	1.2
2/1	1272	1165	-	-	-	8.4	58.9	-	67.4	190.7	23.7	58.9	82.6
2/2	18	18	-	-	-	0.0	0.0	-	0.0	6.9	0.1	0.0	0.1
3/1	383	383	383	0	0	0.1	0.5	-	0.6	5.6	2.0	0.5	2.5
3/2	736	736	736	0	0	0.0	2.0	-	2.0	9.6	0.0	2.0	2.0
4/1	333	333	333	0	0	0.0	0.3	-	0.3	3.2	0.0	0.3	0.3
4/2	501	501	501	0	0	0.0	1.6	-	1.6	11.6	0.0	1.6	1.6
5/1	647	647	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1729	1729	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	377	377	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	87	87	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	586	564	-	-	-	4.1	18.7	-	22.8	140.0	10.1	18.7	28.8
9/2	624	601	-	-	-	4.4	19.4	-	23.8	137.4	10.8	19.4	30.2
10/1	242	242	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	314	314	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	647	647	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -21.3 Total Delay for Signalled Lanes (pcuHr): 114.00 Cycle Time (s): 60
PRC Over All Lanes (%): -21.3 Total Delay Over All Lanes(pcuHr): 120.30

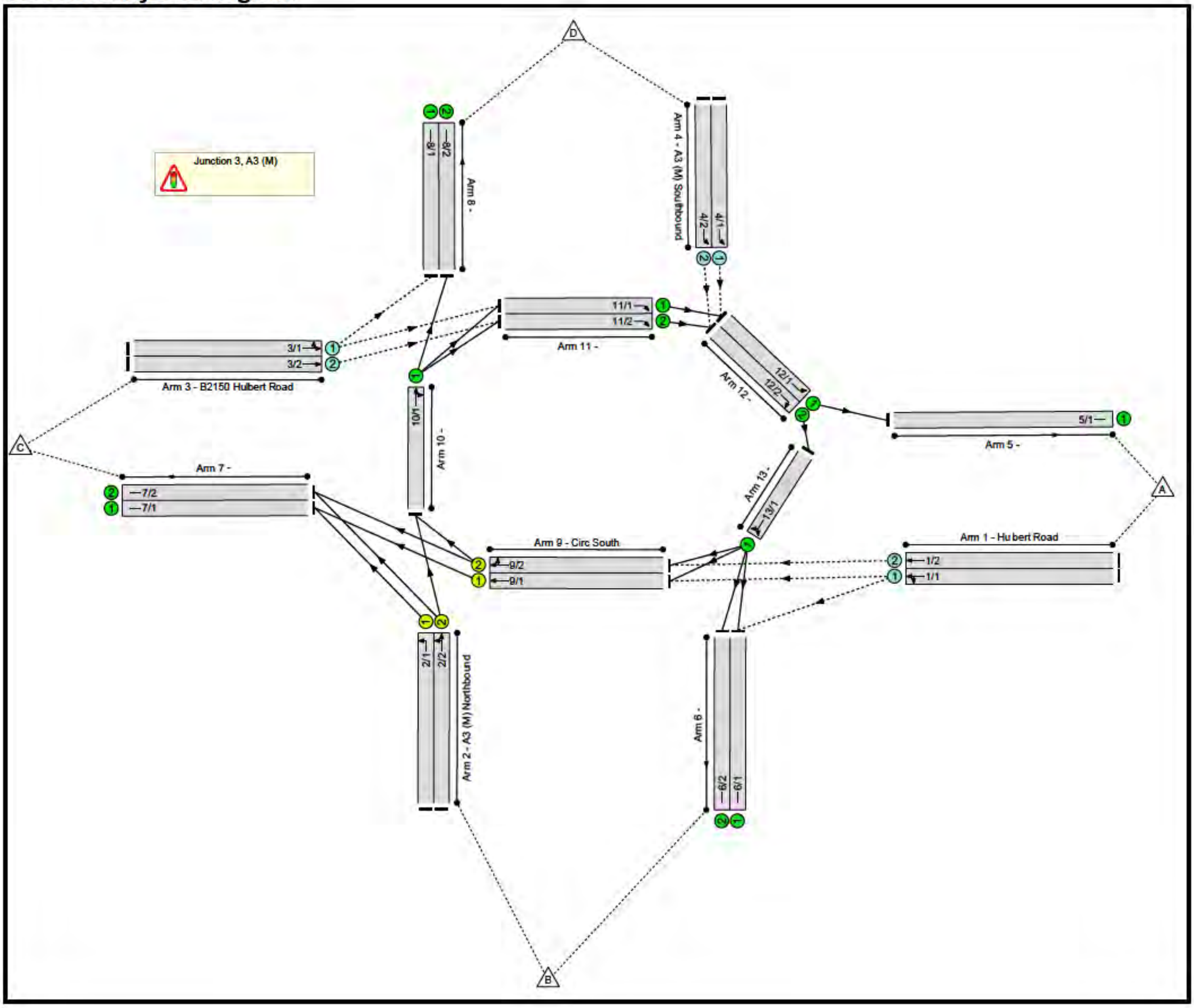
Full Input Data And Results

Full Input Data And Results

User and Project Details

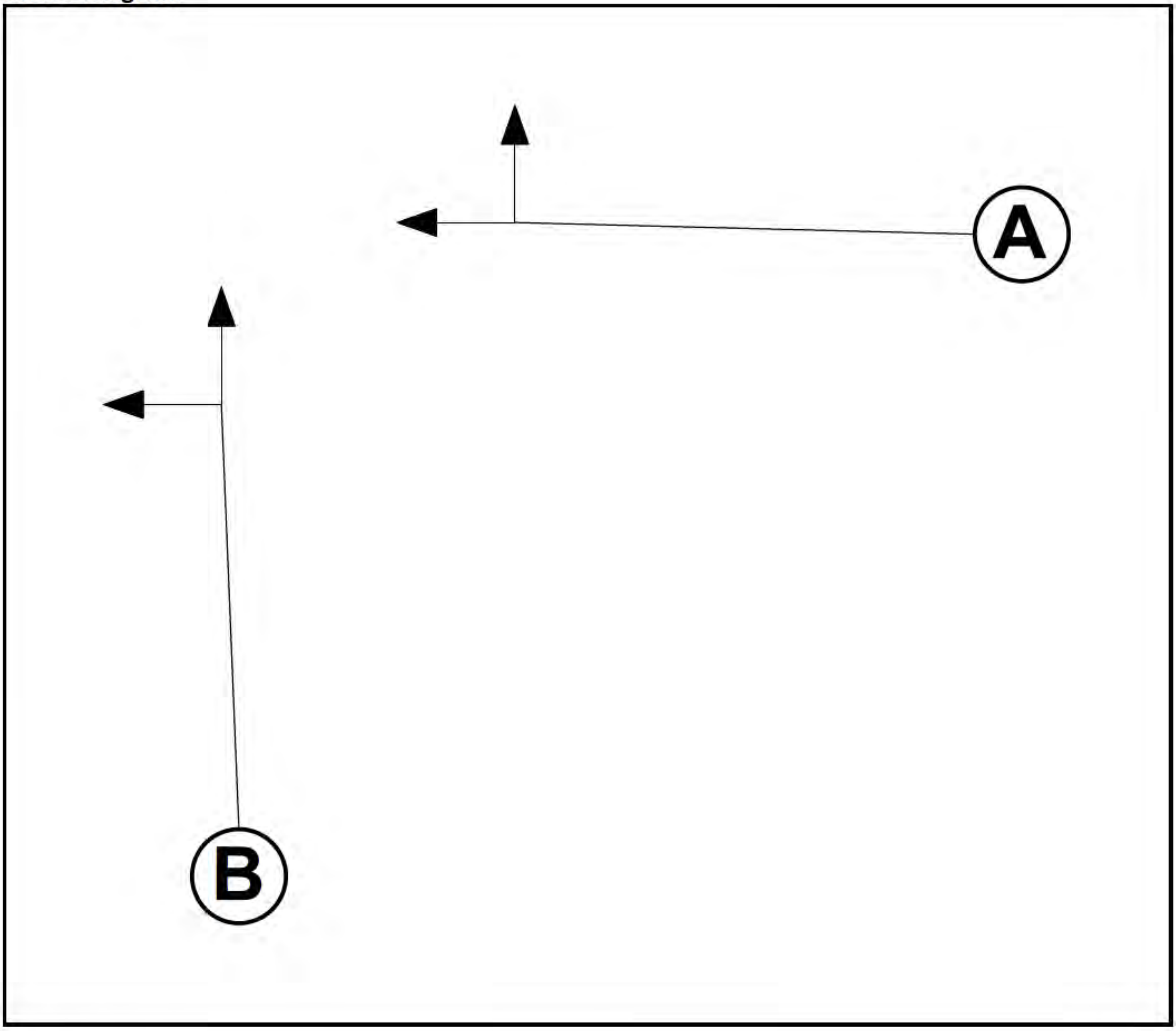
Project:	
Title:	
Location:	
Additional detail:	
File name:	A3 (M) J3 - Permitted left turn from offside lane of A3 (south) approach.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

Phase Intergreens Matrix

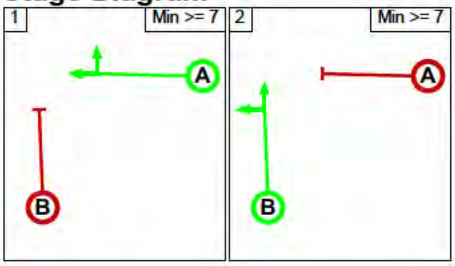
	Starting Phase		
		A	B
Terminating Phase	A		5
	B	5	

Phases in Stage

Stage No.	Phases in Stage
1	A
2	B

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Junction 3, A3 (M)												
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Hulbert Road)	6/1 (Left)	1000	0	13/1	0.33	All	-	-	-	-	-
	9/1 (Ahead)	1000	0	13/1	0.33	All					
1/2 (Hulbert Road)	9/2 (Ahead)	1000	0	13/1	0.33	All	-	-	-	-	-
3/1 (B2150 Hulbert Road)	8/1 (Left)	1000	0	10/1	0.33	To 8/2 (Ahead)	-	-	-	-	-
	11/1 (Ahead)	1000	0	10/1	1.09	To 8/2 (Ahead) To 11/1 (Right)					
3/2 (B2150 Hulbert Road)	11/2 (Ahead)	1000	0	10/1	0.33	All	-	-	-	-	-
4/1 (A3 (M) Southbound)	12/1 (Left)	1000	0	11/1	0.33	All	-	-	-	-	-
4/2 (A3 (M) Southbound)	12/2 (Left)	1000	0	11/2	0.33	All	-	-	-	-	-
				11/1	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: Junction 3, A3 (M)

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 6 Left Arm 9 Ahead	Inf Inf
1/2 (Hulbert Road)	O		2	3	60.0	Geom	-	3.75	0.00	N	Arm 9 Ahead	Inf
2/1 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.83	0.00	Y	Arm 7 Left	5431.00
2/2 (A3 (M) Northbound)	U	B	2	3	60.0	Geom	-	3.61	0.00	N	Arm 7 Left Arm 10 Ahead	Inf 126.00
3/1 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.81	0.00	Y	Arm 8 Left Arm 11 Ahead	645.00 Inf
3/2 (B2150 Hulbert Road)	O		2	3	60.0	Geom	-	3.90	0.00	N	Arm 11 Ahead	122.00
4/1 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.48	0.00	Y	Arm 12 Left	122.00
4/2 (A3 (M) Southbound)	O		2	3	60.0	Geom	-	3.58	0.00	N	Arm 12 Left	164.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Circ South)	U	A	2	3	20.9	Geom	-	4.04	0.00	Y	Arm 7 Ahead	111.00
9/2 (Circ South)	U	A	2	3	20.9	Geom	-	4.00	0.00	N	Arm 7 Ahead Arm 10 Right	127.00 70.00
10/1	U		2	3	19.1	Inf	-	-	-	-	-	-
11/1	U		2	3	27.0	Inf	-	-	-	-	-	-
11/2	U		2	3	27.0	Inf	-	-	-	-	-	-
12/1	U		2	3	15.7	Inf	-	-	-	-	-	-
12/2	U		2	3	15.7	Inf	-	-	-	-	-	-

13/1	U		2	3	7.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Alternative DM AM'	08:00	09:00	01:00	
2: 'Alternative DM PM'	17:00	18:00	01:00	
3: 'Alternative DS AM'	08:00	09:00	01:00	
4: 'Alternative DS PM'	17:00	18:00	01:00	

Scenario 1: 'Alternative DM AM' (FG1: 'Alternative DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	459	195	669
	B	40	3	917	2	962
	C	325	1410	6	387	2128
	D	212	3	309	0	524
	Tot.	577	1431	1691	584	4283

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: Alternative DM AM
Junction: Junction 3, A3 (M)	
1/1	335
1/2	334
2/1	466
2/2	493
3/1	712
3/2	1410
4/1	212
4/2	312
5/1	577
6/1	722
6/2	706
7/1	919
7/2	766
8/1	387
8/2	197
9/1	453
9/2	510
10/1	237
11/1	365
11/2	1410
12/1	577
12/2	1722
13/1	1722

Lane Saturation Flows

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
Junction: Junction 3, A3 (M)								
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	4.5 %	1990	1990
				Arm 9 Ahead	Inf	95.5 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	91.5 %	2114	2114
				Arm 10 Ahead	126.00	8.5 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	54.4 %	1993	1993
				Arm 11 Ahead	Inf	45.6 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	61.8 %	2122	2122
				Arm 10 Right	70.00	38.2 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: 'Alternative DM PM' (FG2: 'Alternative DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	45	487	163	695
	B	18	0	1183	0	1201
	C	291	736	26	263	1316
	D	326	0	524	0	850
	Tot.	635	781	2220	426	4062

Traffic Lane Flows

Lane	Scenario 2: Alternative DM PM
Junction: Junction 3, A3 (M)	
1/1	347
1/2	348
2/1	577
2/2	624
3/1	554
3/2	736
4/1	326
4/2	524
5/1	635
6/1	413
6/2	368
7/1	1138
7/2	1056
8/1	263
8/2	163
9/1	561
9/2	613
10/1	181
11/1	309
11/2	736
12/1	635
12/2	1260
13/1	1260

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	13.0 %	1990	1990
				Arm 9 Ahead	Inf	87.0 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	97.1 %	2115	2115
				Arm 10 Ahead	126.00	2.9 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	47.5 %	1994	1994
				Arm 11 Ahead	Inf	52.5 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	73.4 %	2124	2124
				Arm 10 Right	70.00	26.6 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: 'Alternative DS AM' (FG3: 'Alternative DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	491	205	711
	B	40	3	1011	2	1056
	C	322	1370	6	416	2114
	D	219	3	280	0	502
	Tot.	581	1391	1788	623	4383

Traffic Lane Flows

Lane	Scenario 3: Alternative DS AM
Junction: Junction 3, A3 (M)	
1/1	324
1/2	387
2/1	500
2/2	553
3/1	738
3/2	1370
4/1	219
4/2	283
5/1	581
6/1	702
6/2	686
7/1	973
7/2	809
8/1	416
8/2	207
9/1	473
9/2	503
10/1	247
11/1	362
11/2	1370
12/1	581
12/2	1653
13/1	1653

Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	4.6 %	1990	1990
				Arm 9 Ahead	Inf	95.4 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	92.4 %	2114	2114
				Arm 10 Ahead	126.00	7.6 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	56.4 %	1993	1993
				Arm 11 Ahead	Inf	43.6 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	59.2 %	2122	2122
				Arm 10 Right	70.00	40.8 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 4: 'Alternative DS PM' (FG4: 'Alternative DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	45	476	233	754
	B	18	0	1272	0	1290
	C	296	736	26	87	1145
	D	333	0	501	0	834
	Tot.	647	781	2275	320	4023

Traffic Lane Flows

Lane	Scenario 4: Alternative DS PM
Junction: Junction 3, A3 (M)	
1/1	377
1/2	377
2/1	621
2/2	669
3/1	383
3/2	736
4/1	333
4/2	501
5/1	647
6/1	413
6/2	368
7/1	1201
7/2	1048
8/1	87
8/2	233
9/1	580
9/2	630
10/1	251
11/1	314
11/2	736
12/1	647
12/2	1237
13/1	1237

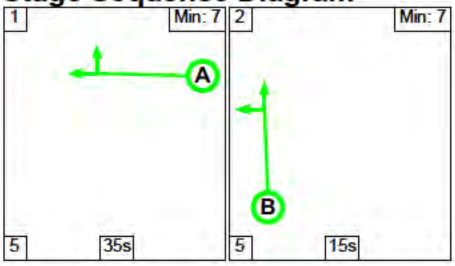
Lane Saturation Flows

Junction: Junction 3, A3 (M)								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hulbert Road)	3.75	0.00	Y	Arm 6 Left	Inf	11.9 %	1990	1990
				Arm 9 Ahead	Inf	88.1 %		
1/2 (Hulbert Road)	3.75	0.00	N	Arm 9 Ahead	Inf	100.0 %	2130	2130
2/1 (A3 (M) Northbound)	3.83	0.00	Y	Arm 7 Left	5431.00	100.0 %	1997	1997
2/2 (A3 (M) Northbound)	3.61	0.00	N	Arm 7 Left	Inf	97.3 %	2115	2115
				Arm 10 Ahead	126.00	2.7 %		
3/1 (B2150 Hulbert Road)	3.81	0.00	Y	Arm 8 Left	645.00	22.7 %	1995	1995
				Arm 11 Ahead	Inf	77.3 %		
3/2 (B2150 Hulbert Road)	3.90	0.00	N	Arm 11 Ahead	122.00	100.0 %	2119	2119
4/1 (A3 (M) Southbound)	3.48	0.00	Y	Arm 12 Left	122.00	100.0 %	1939	1939
4/2 (A3 (M) Southbound)	3.58	0.00	N	Arm 12 Left	164.00	100.0 %	2094	2094
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Circ South)	4.04	0.00	Y	Arm 7 Ahead	111.00	100.0 %	1992	1992
9/2 (Circ South)	4.00	0.00	N	Arm 7 Ahead	127.00	63.0 %	2122	2122
				Arm 10 Right	70.00	37.0 %		
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 1: 'Alternative DM AM' (FG1: 'Alternative DM AM', Plan 1: 'Network Control Plan 1')

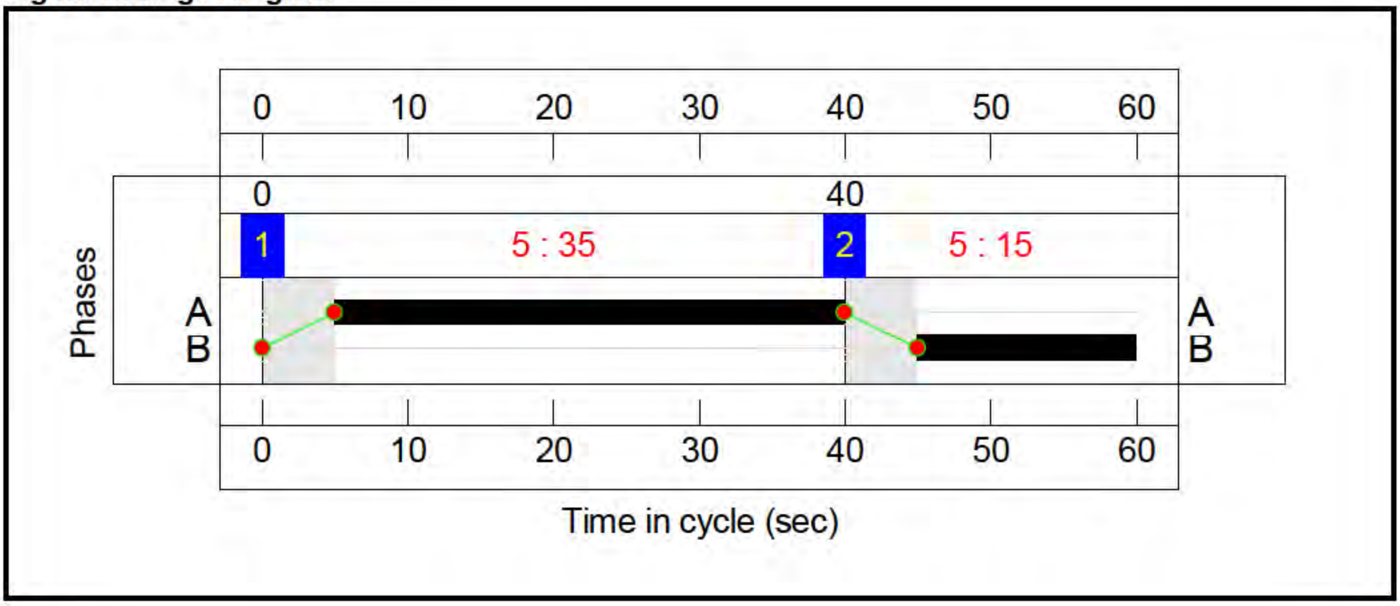
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	35	15
Change Point	0	40

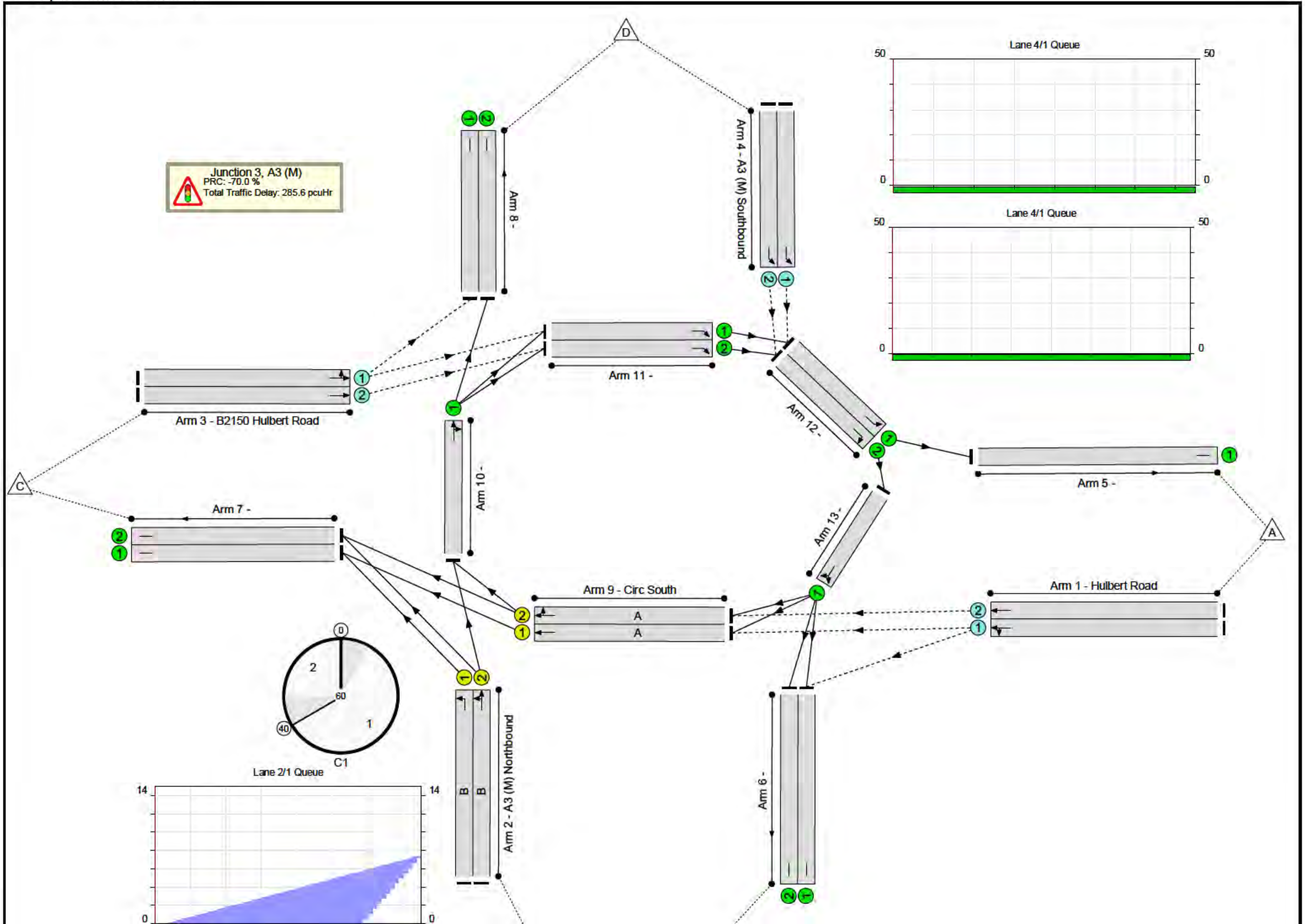
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**153.0%**
Junction 3, A3 (M)	-	-	**N/A**	-	-		-	-	-	-	-	-	**153.0%**
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	335	1990	593	56.5%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	334	2130	593	56.4%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	15	-	466	1997	533	87.5%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	15	-	493	2114	564	87.5%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	712	1993	826	86.2%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	1410	2119	922	153.0%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	212	1939	879	24.1%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	312	2094	575	54.2%
5/1		U	N/A	N/A	-		-	-	-	577	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	722	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	706	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	919	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	387	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	35	-	453	1992	1195	37.9%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	35	-	510	2122	1273	40.1%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	237	Inf	Inf	0.0%

Full Input Data And Results

11/1	Ahead	U	N/A	N/A	-		-	-	-	365	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	1410	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	577	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1722	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1722	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2827**	**0**	**0**	**27.9**	**257.7**	**0.0**	**285.6**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**2827**	**0**	**0**	**27.9**	**257.7**	**0.0**	**285.6**	**-**	**-**	**-**	**-**
1/1	335	335	335	0	0	0.0	0.6	-	0.6	7.0	0.0	0.6	0.6
1/2	334	334	334	0	0	0.0	0.6	-	0.6	6.9	0.0	0.6	0.6
2/1	466	466	-	-	-	2.7	3.2	-	5.9	45.7	7.4	3.2	10.6
2/2	493	493	-	-	-	2.9	3.2	-	6.1	44.4	7.8	3.2	11.0
3/1	712	712	712	0	0	0.1	3.0	-	3.1	15.5	4.7	3.0	7.7
3/2	1410	922	922	0	0	20.5	245.7	-	266.1	679.5	70.5	245.7	316.2
4/1	212	212	212	0	0	0.0	0.2	-	0.2	2.7	0.0	0.2	0.2
4/2	312	312	312	0	0	0.0	0.6	-	0.6	6.8	0.0	0.6	0.6
5/1	577	577	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	478	478	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	462	462	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	919	919	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	387	387	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	197	197	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	453	453	-	-	-	0.8	0.3	-	1.1	8.6	3.9	0.3	4.2
9/2	510	510	-	-	-	0.9	0.3	-	1.2	8.7	4.4	0.3	4.7
10/1	237	237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	365	365	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	922	922	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	577	577	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1234	1234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1234	1234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

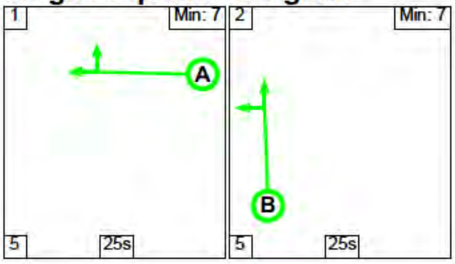
C1 PRC for Signalled Lanes (%): 2.8 Total Delay for Signalled Lanes (pcuHr): 14.32 Cycle Time (s): 60
PRC Over All Lanes (%): -70.0 Total Delay Over All Lanes(pcuHr): 285.56

Full Input Data And Results

Full Input Data And Results

Scenario 2: 'Alternative DM PM' (FG2: 'Alternative DM PM', Plan 1: 'Network Control Plan 1')

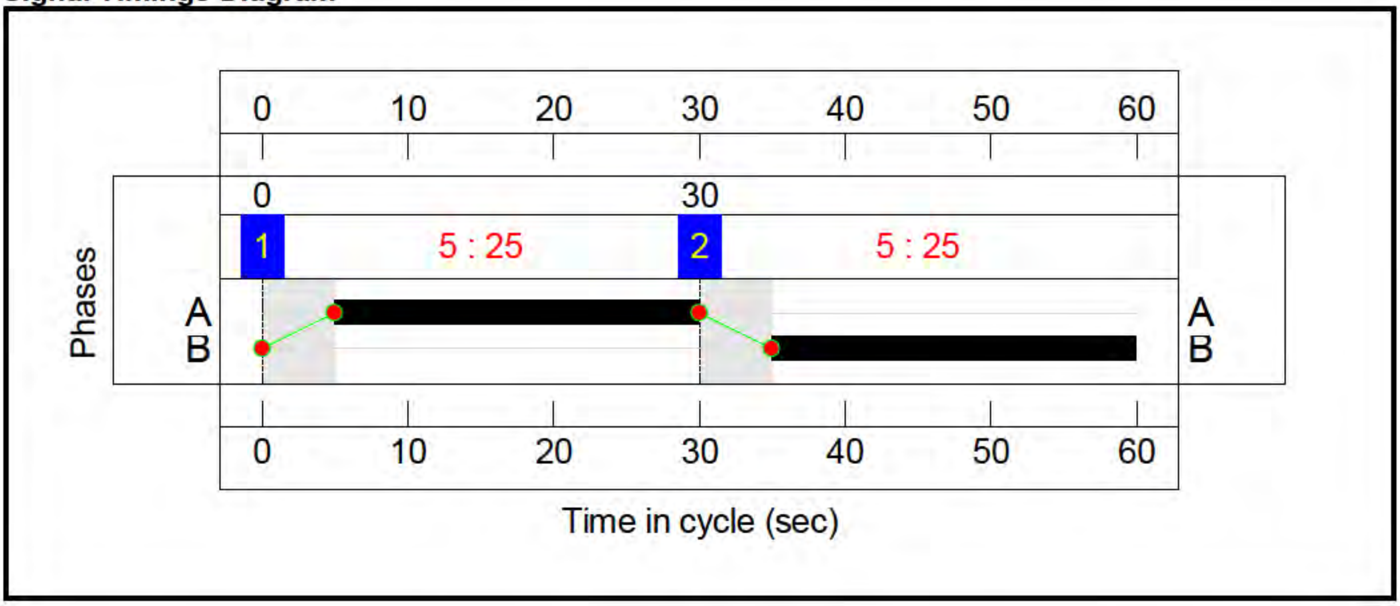
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	25	25
Change Point	0	30

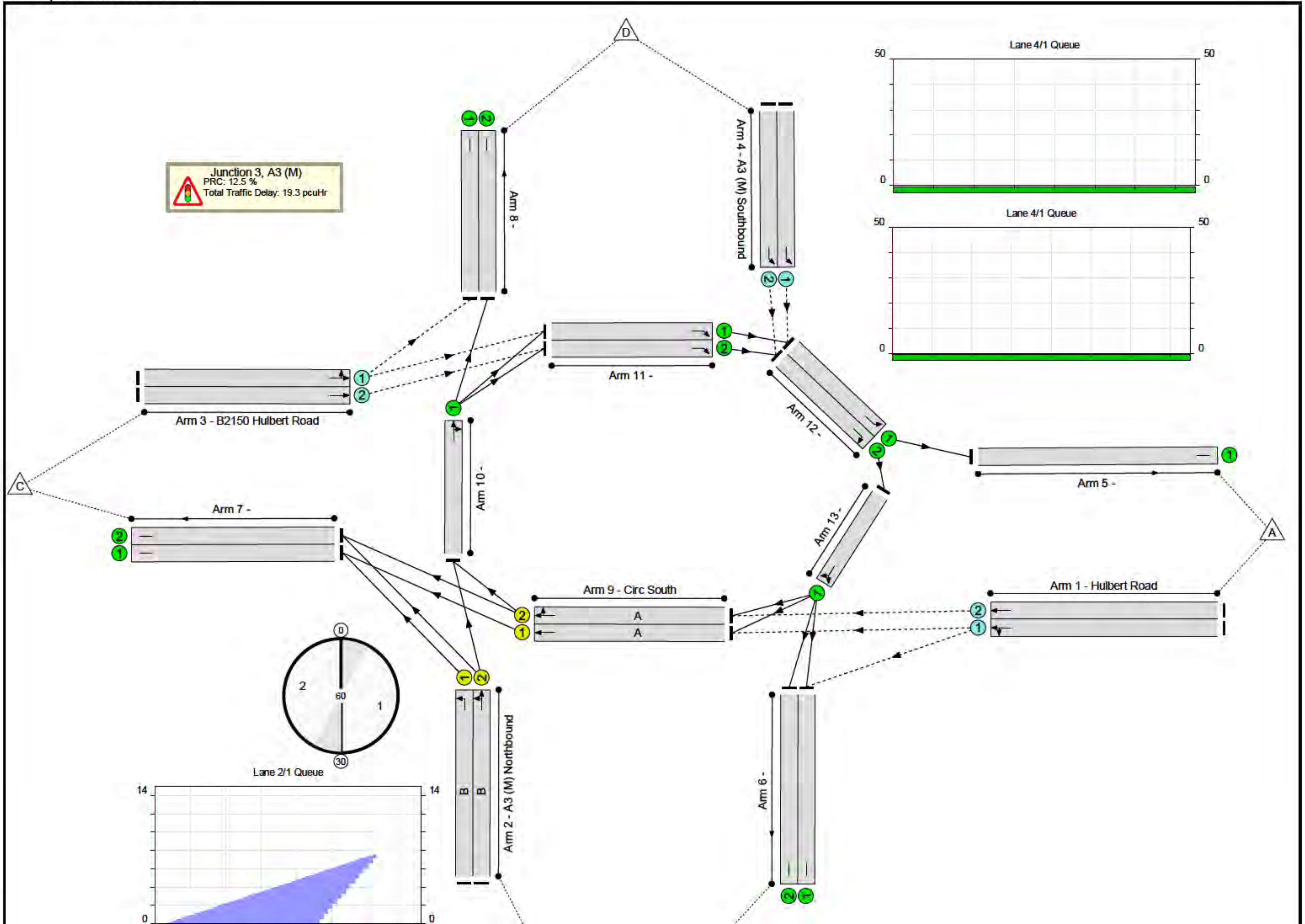
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	**80.0%**
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	**80.0%**
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	347	1990	584	59.4%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	348	2130	584	59.6%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	25	-	577	1997	865	66.7%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	25	-	624	2115	916	68.1%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	554	1994	856	64.7%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	736	2119	940	78.3%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	326	1939	898	36.3%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	524	2094	655	80.0%
5/1		U	N/A	N/A	-		-	-	-	635	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	413	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	368	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1138	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1056	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	263	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	25	-	561	1992	863	65.0%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	25	-	613	2124	920	66.6%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	181	Inf	Inf	0.0%

Full Input Data And Results

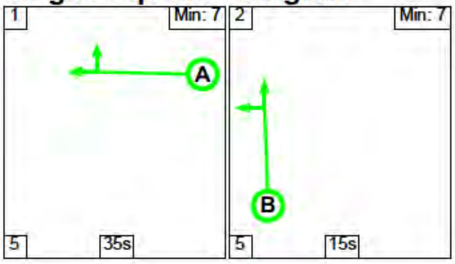
11/1	Ahead	U	N/A	N/A	-		-	-	-	309	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	635	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1260	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1260	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**2835**	**0**	**0**	**8.9**	**10.3**	**0.0**	**19.3**	-	-	-	-
Junction 3, A3 (M)	-	-	**2835**	**0**	**0**	**8.9**	**10.3**	**0.0**	**19.3**	-	-	-	-
1/1	347	347	347	0	0	0.0	0.7	-	0.7	7.6	0.0	0.7	0.7
1/2	348	348	348	0	0	0.0	0.7	-	0.7	7.6	0.0	0.7	0.7
2/1	577	577	-	-	-	2.2	1.0	-	3.2	19.8	7.5	1.0	8.5
2/2	624	624	-	-	-	2.4	1.1	-	3.4	19.8	8.3	1.1	9.4
3/1	554	554	554	0	0	0.0	0.9	-	0.9	5.9	1.1	0.9	2.0
3/2	736	736	736	0	0	0.0	1.8	-	1.8	8.7	0.0	1.8	1.8
4/1	326	326	326	0	0	0.0	0.3	-	0.3	3.1	0.0	0.3	0.3
4/2	524	524	524	0	0	0.0	1.9	-	1.9	13.4	0.0	1.9	1.9
5/1	635	635	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1138	1138	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1056	1056	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	263	263	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	163	163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	561	561	-	-	-	2.1	0.9	-	3.0	19.3	7.3	0.9	8.2
9/2	613	613	-	-	-	2.3	1.0	-	3.3	19.4	8.0	1.0	9.0
10/1	181	181	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	309	309	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	635	635	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1260	1260	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1260	1260	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

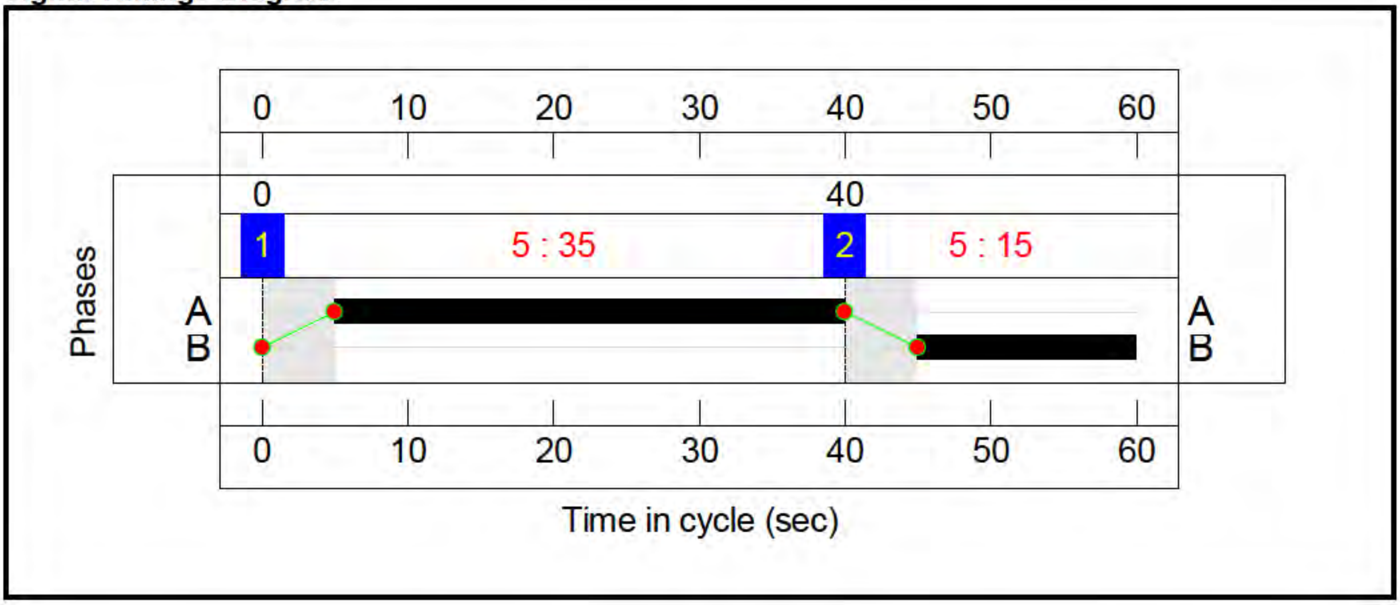
C1 PRC for Signalled Lanes (%): 32.2 Total Delay for Signalled Lanes (pcuHr): 12.90 Cycle Time (s): 60
PRC Over All Lanes (%): 12.5 Total Delay Over All Lanes(pcuHr): 19.28

Full Input Data And Results

Full Input Data And Results
Scenario 3: 'Alternative DS AM' (FG3: 'Alternative DS AM', Plan 1: 'Network Control Plan 1')
Stage Sequence Diagram


Stage Timings

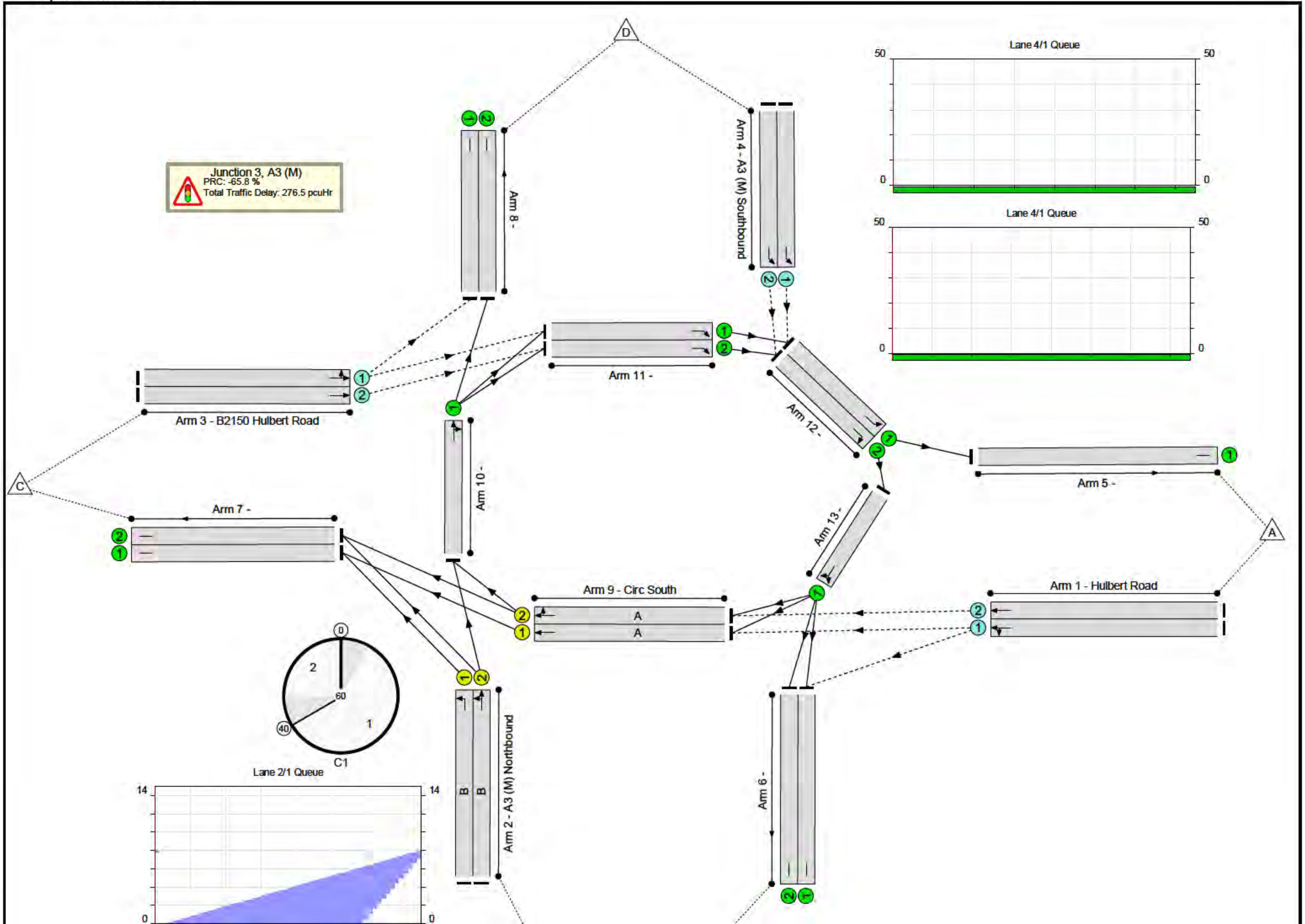
Stage	1	2
Duration	35	15
Change Point	0	40

Signal Timings Diagram


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	149.2%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	149.2%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	324	1990	603	53.7%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	387	2130	603	64.1%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	15	-	500	1997	533	93.9%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	15	-	553	2114	564	98.1%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	738	1993	820	90.0%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	1370	2119	918	149.2%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	219	1939	880	24.9%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	283	2094	577	49.0%
5/1		U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	686	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	973	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	809	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	416	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	207	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	35	-	473	1992	1195	39.6%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	35	-	503	2122	1273	39.5%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	247	Inf	Inf	0.0%

Full Input Data And Results

11/1	Ahead	U	N/A	N/A	-		-	-	-	362	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	1370	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1653	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1653	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2869**	**0**	**0**	**27.2**	**249.3**	**0.0**	**276.5**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**2869**	**0**	**0**	**27.2**	**249.3**	**0.0**	**276.5**	**-**	**-**	**-**	**-**
1/1	324	324	324	0	0	0.0	0.6	-	0.6	6.4	0.0	0.6	0.6
1/2	387	387	387	0	0	0.0	0.9	-	0.9	8.3	0.0	0.9	0.9
2/1	500	500	-	-	-	3.0	5.7	-	8.7	62.5	8.1	5.7	13.7
2/2	553	553	-	-	-	3.4	9.4	-	12.7	82.9	9.1	9.4	18.4
3/1	738	738	738	0	0	0.2	4.1	-	4.3	20.8	6.8	4.1	10.8
3/2	1370	918	918	0	0	18.9	227.4	-	246.3	647.3	68.5	227.4	295.9
4/1	219	219	219	0	0	0.0	0.2	-	0.2	2.7	0.0	0.2	0.2
4/2	283	283	283	0	0	0.0	0.5	-	0.5	6.1	0.0	0.5	0.5
5/1	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	476	476	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	973	973	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	809	809	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	416	416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	207	207	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	473	473	-	-	-	0.8	0.3	-	1.2	8.8	4.1	0.3	4.4
9/2	503	503	-	-	-	0.9	0.3	-	1.2	8.6	4.3	0.3	4.7
10/1	247	247	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	362	362	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	918	918	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1201	1201	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1201	1201	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

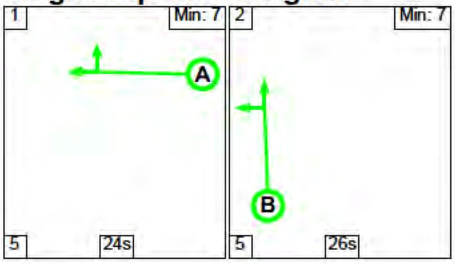
C1 PRC for Signalled Lanes (%): -9.0 Total Delay for Signalled Lanes (pcuHr): 23.78 Cycle Time (s): 60
PRC Over All Lanes (%): -65.8 Total Delay Over All Lanes(pcuHr): 276.48

Full Input Data And Results

Full Input Data And Results

Scenario 4: 'Alternative DS PM' (FG4: 'Alternative DS PM', Plan 1: 'Network Control Plan 1')

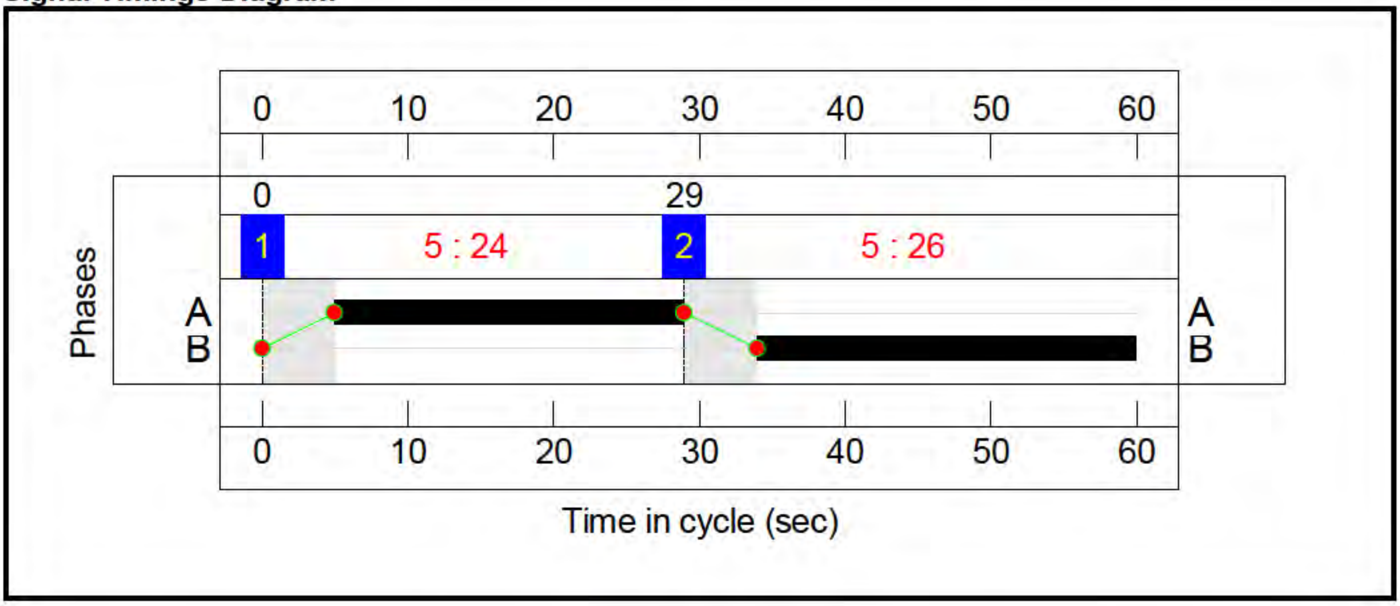
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	24	26
Change Point	0	29

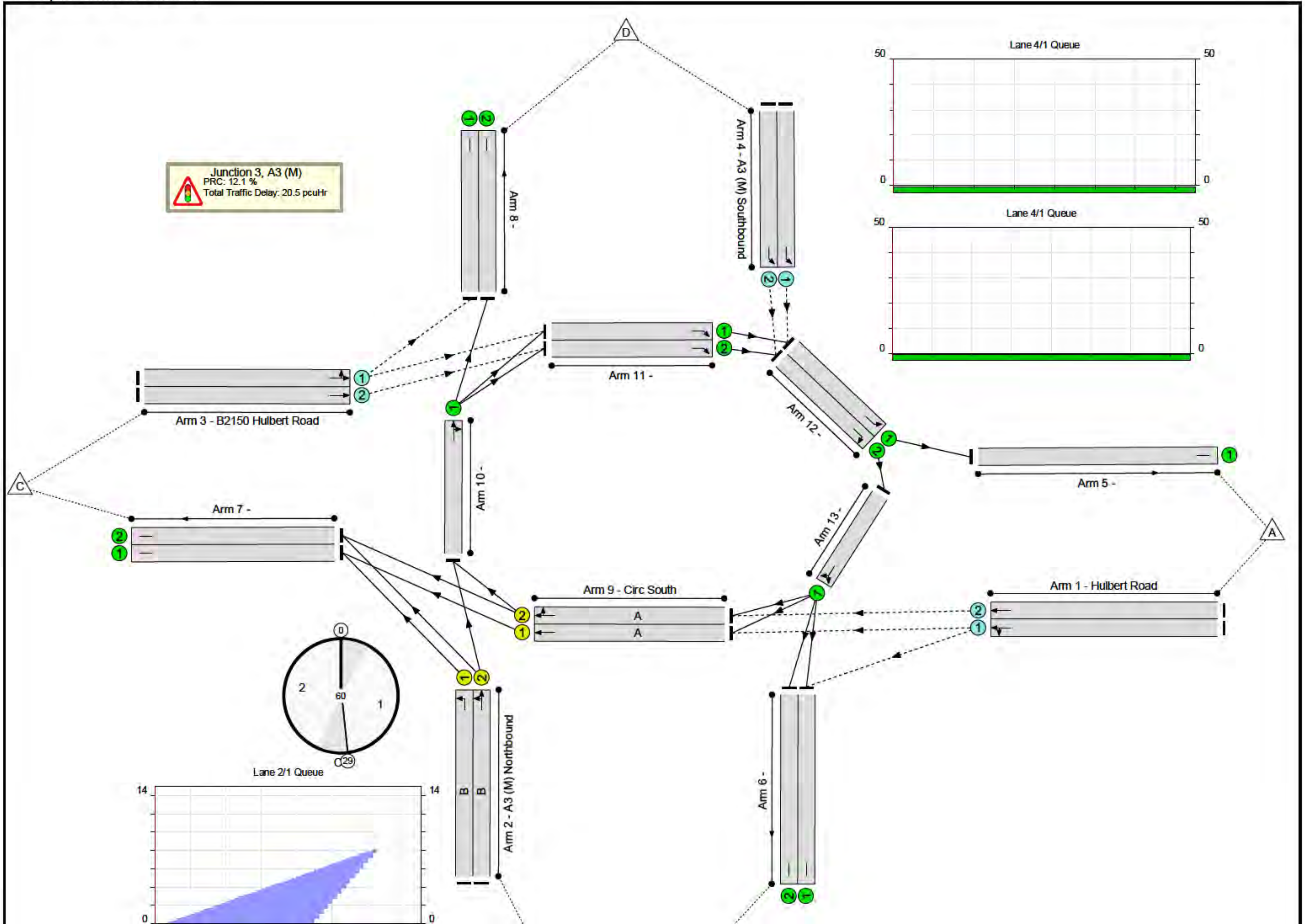
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	80.3%
Junction 3, A3 (M)	-	-	N/A	-	-		-	-	-	-	-	-	80.3%
1/1	Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	377	1990	592	63.7%
1/2	Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	377	2130	592	63.7%
2/1	A3 (M) Northbound Left	U	N/A	N/A	B		1	26	-	621	1997	899	69.1%
2/2	A3 (M) Northbound Left Ahead	U	N/A	N/A	B		1	26	-	669	2115	952	70.3%
3/1	B2150 Hulbert Road Left Ahead	O	N/A	N/A	-		-	-	-	383	1995	750	51.1%
3/2	B2150 Hulbert Road Ahead	O	N/A	N/A	-		-	-	-	736	2119	917	80.3%
4/1	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	333	1939	896	37.2%
4/2	A3 (M) Southbound Left	O	N/A	N/A	-		-	-	-	501	2094	653	76.7%
5/1		U	N/A	N/A	-		-	-	-	647	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	413	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	368	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1201	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1048	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	87	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
9/1	Circ South Ahead	U	N/A	N/A	A		1	24	-	580	1992	830	69.9%
9/2	Circ South Ahead Right	U	N/A	N/A	A		1	24	-	630	2122	884	71.3%
10/1	Ahead Right	U	N/A	N/A	-		-	-	-	251	Inf	Inf	0.0%

Full Input Data And Results

11/1	Ahead	U	N/A	N/A	-		-	-	-	314	Inf	Inf	0.0%
11/2	Ahead	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	647	Inf	Inf	0.0%
12/2	Right	U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%
13/1	Ahead Right	U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2707**	**0**	**0**	**9.7**	**10.8**	**0.0**	**20.5**	**-**	**-**	**-**	**-**
Junction 3, A3 (M)	**-**	**-**	**2707**	**0**	**0**	**9.7**	**10.8**	**0.0**	**20.5**	**-**	**-**	**-**	**-**
1/1	377	377	377	0	0	0.0	0.9	-	0.9	8.3	0.0	0.9	0.9
1/2	377	377	377	0	0	0.0	0.9	-	0.9	8.3	0.0	0.9	0.9
2/1	621	621	-	-	-	2.3	1.1	-	3.4	19.6	8.1	1.1	9.2
2/2	669	669	-	-	-	2.5	1.2	-	3.6	19.6	8.9	1.2	10.1
3/1	383	383	383	0	0	0.1	0.5	-	0.6	5.5	1.8	0.5	2.3
3/2	736	736	736	0	0	0.0	2.0	-	2.0	9.7	0.0	2.0	2.0
4/1	333	333	333	0	0	0.0	0.3	-	0.3	3.2	0.0	0.3	0.3
4/2	501	501	501	0	0	0.0	1.6	-	1.6	11.6	0.0	1.6	1.6
5/1	647	647	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1201	1201	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1048	1048	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	87	87	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	233	233	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	580	580	-	-	-	2.3	1.1	-	3.5	21.5	7.9	1.1	9.0
9/2	630	630	-	-	-	2.5	1.2	-	3.8	21.5	8.6	1.2	9.8
10/1	251	251	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	314	314	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	647	647	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 26.3 Total Delay for Signalled Lanes (pcuHr): 14.26 Cycle Time (s): 60
PRC Over All Lanes (%): 12.1 Total Delay Over All Lanes(pcuHr): 20.48

Full Input Data And Results